Job-Related Attitudes and the Correlation to Attitude Toward Technology in Higher Education Faculty

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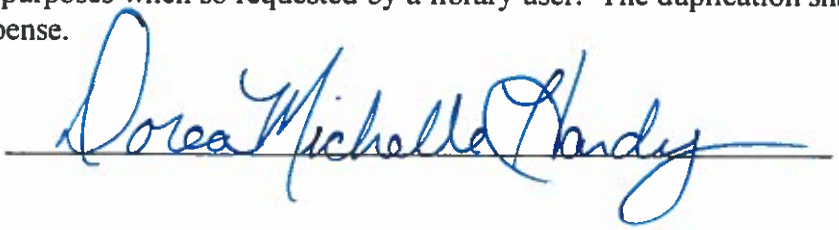
Signature 

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ABSTRACT

A significant majority of research focusing on both technology and burnout has focused on how *new* technology affects the job-related attitudes of the employees. This research looked at technology and burnout from a different perspective. The technology in question had been in place for several years. Most University System of Georgia (USG) faculty should have already been exposed to the D2L Brightspace platform. However, around the time of this research (2018), the technology was receiving an upgrade, moving to the version called "Daylight." The aim of this study was twofold. First, this study intended to add to the limited knowledge base of technology acceptance in the context of an upgrade. Second, this study investigated a snapshot of job-related attitudes of the employees. The Maslach Burnout Inventory–Educators Survey (MBI-ES) was joined with the Technology Acceptance Model (TAM) to see how the job-related attitudes of the employees affected their acceptance of the technology upgrade to the Learning Management System (LMS).

Keywords: attitudes, technology, higher education, burnout, technology acceptance

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DEDICATION

To Common Sense, wherever you are…

Chapter I

INTRODUCTION

In 2000, the United States of America was challenged to incorporate online learning as part of the national education agenda by the Web-Based Education Commission (Web-Based Education Commission, 2000). Since that time, Learning Management Systems (LMSs) have developed to become the common means for institutions of higher education to deliver education through the online medium (Connolly, MacArthur, Stansfield, & McLellan, 2007; Dahlstrom, Brooks, & Bichsel, 2014; DeNeui & Dodge, 2006; El Mansour & Mupinga, 2007; Fathema, Shannon, & Ross, 2015; McGill & Hobbs, 2008). In efforts to create better systems and improve acceptance of LMSs, the various software products that fall into the category of "LMS" have become the subject of many research studies over the past 30 years. Many of these studies on the acceptance of LMSs have been conducted utilizing the Technology Acceptance Model (TAM) to evaluate the levels of acceptance; however, a large majority of the studies have focused on students' levels of acceptance (e.g., Agarwal & Prasad, 1997; Bagozzi, Davis, & Warshaw, 1992; Bush, 2006; Dasgupta, Granger, & McGarry, 2002; Davis, Bagozzi, & Warshaw, 1989; Gefen, Karahanna, & Straub, 2003; Ifinedo, 2006; Kim, 2005; Lau & Woods, 2008; Lee, Cheung, & Chen, 2005; Liaw & Huang, 2003; Liaw, 2002; Magliaro, 2010; Saadé & Kira, 2006; Sung Youl, 2009; Szajna, 1996; Thompson, Compeau, & Higgins, 2006; Wei & Zhang, 2008; Weiyin, Thong, Wai-Man, & Kar-Yan, 2002; Yang, 2007). In contrast, relatively few studies have focused on the

higher education faculty who are teaching these students (e.g., Agbatogun, 2013; Averweg, 2008; Ball & Levy, 2008; Fathema et al., 2015; Gong, Xu, & Yu, 2004; Kolowich, 2011; Sahin & Thompson, 2007; Tetiwat & Huff, 2002; Zhang & Xu, 2011).

The past several years have seen a nation-wide focus on college completion rates due to the 44th U.S. President Barack Obama's Complete College America initiative (Complete College America, 2013). This initiative has placed a significant emphasis on student success and associated factors of that success for institutions. These factors, both known and unknown have become the focus of study for many researchers in an attempt to assist institutions in improving student success. Additionally, many states have begun changing from a full-time equivalent funding model of higher education to a performance-based funding model (National Conference of State Legislatures, 2015). In 2005, the Board of Regents of the University System of Georgia began looking at a performance-based funding formula (University System of Georgia, 2005) for its institutions. This placed an additional burden on institutions within the system to ensure students successfully progress through their coursework and graduate within a specific time frame from their matriculation date.

Moreover, student success in online courses is affected by faculty buy-in to the use of the institutions' LMSs (Fathema et al., 2015). However, multiple studies have shown that faculty members are not utilizing LMSs to their fullest capabilities (Allen & Seaman, 2010; Dahlstrom et al., 2014; Fathema et al., 2015; Jaschik & Lederman, 2014). This lack of utilization points to poor levels of faculty buy-in of the institutions' LMSs, which in turn can affect students' engagement and ultimately success in their courses.

According to McGill and Klobas (2009), instructors who doubt the worth of LMSs in instruction may "unwittingly negatively impact" (p. 505) the success of students in their courses. Faculty doubt of LMSs is not due to a lack of this type of software product in higher education. According to a study by Dahlstrom et al. (2014), nearly 99% of higher education institutions have an LMS in place. However, only around 50% of faculty report utilizing that system regularly and most report not utilizing advanced capabilities. Some common capabilities include quizzing, grade books, and discussion forums; more advanced features include early alerts and progress tracking (Dahlstrom et al., 2014; Kroner, 2014). Instead, the majority of instructors use the LMS primarily as a means of distributing information to their students. These unused features of the LMS have the potential to improve the outcomes of their students.

Fathema et al. (2015) stated that "more research is required to gain better understanding of the factors that affect faculty members LMS usage" (p. 211). As mentioned previously, many researchers have used the Technology Acceptance Model (TAM) to study LMSs. This model lends itself to being extended to incorporate other independent variables into this line of research (Dasgupta et al., 2002; Lau & Woods, 2008; Wei & Zhang, 2008; Wu & Lederer, 2009; Zhang & Xu, 2011).

The pressure to ensure students matriculate and graduate within a specified period is an additional stressor with which faculty must contend beyond normal daily stressors. Research has proven that a person's health, both physically and emotionally, is detrimentally affected by ongoing, chronic stress, as well as frustration and potentially anger (Kalimo, El-Batawi, & Cooper, 1987; Pousette & Hanse, 2002). This is especially true for people who fall into the classification of a 'helping profession;' which includes

the category of higher education faculty, as this classification is at a higher risk for developing stress and potentially suffering from burn out (Rush, 2003). Thus, it can be concluded from the current body of research, that faculty members are at a higher risk of burnout; which may lead to a decline or resistance to faculty usage of technology, specifically learning management systems.

Burnout theory states that burnout "occurs when certain valued resources are lost, are inadequate to meet demands, or do not yield the anticipated returns. These major demands of work include role ambiguity, role conflict, stressful events, heavy workload, and pressure" (Lee & Ashforth, 1996, p. 123). For faculty, a new LMS or major updates to the system can mean taking time from normal activities such as teaching courses or attending meetings. Additionally, faculty may need to receive training or take the time to attempt to learn the software on their own. According to Hobfoll (2001) "people must invest resources in order to protect against resource loss, recover from losses and gain resources" (p. 349). Time is an essential resource for faculty that, once used, cannot be reclaimed. An LMS might not fully meet a faculty member's needs or requirements, leading to frustration with the system and wasted time. On the other hand, the system may be promoted by administrators to faculty as the 'end-all' solution but ultimately fall short of the claimed promises. Any of these scenarios is plausible and only adds to faculty doubt and frustration on top of all of the other regular concerns of advisees, committee meetings, publishing deadlines, and other duties as assigned by administrators.

Statement of the Problem

Technology is continuously changing, and post-secondary institutions are focused on adopting and implementing Learning Management Systems (LMSs) that further the

educational process. With over 5.7 million students enrolled in distance education courses at degree-granting postsecondary institutions (U.S. Department of Education National Center for Education Statistics, 2016) the adoption, implementation, and significant upgrades of LMSs is having an impact on teaching and learning (Dahlstrom et al., 2014; Lee et al., 2005; Saadé & Kira, 2006). Due to the frequent changes in LMSs, a problem has arisen in higher education regarding the consistency of quality online education. Despite the investment institutions have made in LMSs, faculty members are not fully accepting and utilizing the systems. Multiple studies that show that faculty members are not utilizing LMSs to their fullest capabilities (Allen & Seaman, 2010; Dahlstrom et al., 2014; Fathema et al., 2015; Jaschik & Lederman, 2014) showcase this issue. This problem affects the quality of online courses developed by faculty, and in turn, lower quality courses negatively affect the success and retention of students. A possible cause of the lack of faculty acceptance of technology is job-related burnout. Research which investigates burnout through the technology acceptance model, could shed some light on the situation.

Purpose of the Study

The purpose of this study was to discover whether or to what degree job-related burnout affects attitudes toward online learning technology by faculty. This study also investigated the relationship between the burnout variables of emotional exhaustion, depersonalization, and personal accomplishment and the technology acceptance model variables of perceived usefulness and perceived ease of use in faculty's utilization of LMSs. Lastly, this study evaluated the sub-populations of selected faculty demographic

variables such as rank, gender, and race/ethnic origin to explore the relationship between the variables of burnout or technology acceptance.

Research Questions

For the purpose of this study, the research questions this study addressed are:

1. To what extent are emotional exhaustion, depersonalization, and personal accomplishment significant predictors of perceived usefulness, while controlling for tenure status, professional rank, and years using an LMS?
2. To what extent are emotional exhaustion, depersonalization, and personal accomplishment significant predictors of perceived ease of use, while controlling for tenure status, professional rank, and years using an LMS?
3. To what extent are perceived usefulness and perceived ease of use significant predictors of attitudes toward using technology, while controlling for tenure status, professional rank, years using an LMS, emotional exhaustion, depersonalization, and personal accomplishment?

Research Methodology

For the purpose of this study, the MBI-ES survey instrument was combined with a modified version of the TAM survey instrument. Additional demographic questions were included in the survey instrument. The survey instrument was distributed electronically to survey participants from the selected institutions of the University System of Georgia (USG). Hierarchical linear regression was used to analyze the results. The demographic variables and the MBI-ES variables were independent variables in all three research questions. The dependent variable for the first research question was Perceived Usefulness (PU), and the dependent variable for the second research question was

Perceived Ease of Use (PEOU). For the third research question, both PU and PEOU became independent variables, and Attitude Towards (AT) technology was the dependent variable.

Significance of the Study

Prior research has shown that adequately preparing end-users can assist with reducing anxiety, enhance performance, and provide them with a feeling of control over the system in question (Inzana, Driskell, Salas, & Johnston, 1996). Based on prior research and the results of this study, justification can be developed for increasing faculty training on LMS's or other campus-wide technologies. There may also be direction derived from the results that can support training for specific modules of an LMS. The results may also justify the need for trainers in Information Technology (IT) departments or I.T. specialists in departments devoted to training on post-secondary campuses, such as Centers for Excellence in Teaching in Learning (CETL) and Continuing Education (CE) departments.

Instructional designers and information technology trainers can utilize the outcomes from this study in the development of technology-related training with the goal of equipping employees with the means to help prevent burnout when it comes to using technology as well as improving acceptance of the technology. There is also the potential to reduce the cognitive load of the faculty members, so they can have more cognitive power to allocate towards developing and improving courses. By improving faculty acceptance and potentially reducing the cognitive load on faculty members, there will be a measurable effect on student success; thereby helping institutions improve student success, retention, and graduation. Personnel such as CETL directors and others

responsible for faculty training, as well as instructional designers, should receive benefit through an added understanding of various factors they can focus on in their future trainings of LMS technologies and course development projects. Not only may this information help prevent burnout, but it may help these leaders know how to help faculty and provide resources to help increase faculty levels of acceptance of technology. Through this process, courses will be improved to become more engaging, thereby increasing the potential for student success. "By providing employees needed psychological resources for coping with technological changes, organizations can reduce costs, prevent unnecessary stress and strain, and avert employee dissatisfaction" (Chen, Westman, & Eden, 2009, p. 227).

Conceptual Frameworks

The foundation for the theoretical framework for this study was the Technology Acceptance Model (TAM). TAM was extended with burnout through the addition of the Maslach Burnout Inventory–Educators Survey (MBI-ES) instrument. The theoretical lens for the burnout component of this study was Conservation of Resources (COR) theory of stress.

TAM was developed by Fred Davis (1986) and is an extension of Theory of Reasoned Action by Fishbein and Ajzen (1975). The model was developed with the purpose of providing a means of obtaining consistent and accurate results about users' acceptance of technology. Since its development, it has been modified and extended by Davis and other researchers over a 30-year period. These changes have been in attempts to strengthen the model or provide additional information about reasons behind users' acceptance or lack thereof for a particular technology. Despite the many modifications or

extensions, the primary core of TAM remains the same. User motivation for using a technology is measured through Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) of a technology which affects a user's Attitude Towards (AT) using a technology, which in turn affects their Actual Use (AU) of the technology. This study will use a modified version of TAM, focusing on the attitude component of the model, and not incorporating the actual usage portion. Multiple research studies have been conducted to see what external variables might affect a user's PU and PEOU and thereby affect their acceptance of the technology (Amoako-Gyampah & Salam, 2004; Bao, Xiong, Hu, & Kibelloh, 2013; Gefen & Straub, 1997; Ku, 2009). This research study will find another potential underlying facet of the acceptance of technology.

The Maslach Burnout Inventory–Educators Survey (MBI-ES) is one of the first variations of the original Maslach Burnout Inventory (MBI). This particular version of the instrument was designed with educators and those who work in educational environments in mind. This MBI-ES, like all other versions of the MBI, has three dimensions which it measures: emotional exhaustion (EE), depersonalization (DP), and personal accomplishment (PA). The MBI and its variations are recognized as the leading instruments in the field of burnout (Maslach, Jackson, & Leiter, 2016). Prior research in the field has closely tied the MBI to COR theory (Lee & Ashforth, 1996). It has also successfully been repeatedly combined with many other instruments to provide more significant insights into the factors that contribute to, as well as prevent, burnout (Bakker, Demerouti, & Schaufeli, 2002; Demerouti, Bakker, de Jonge, Janssen, & Schaufeli, 2001; Schaufeli & Bakker, 2004).

Conservation of Resources (COR) theory was developed by Hobfoll (1989) and is "an integrated model of stress that encompasses several stress theories" (Thompson, 2001, p. 1). This theory states that gaining or preventing loss of resources can be a method of stress prevention (Chen et al., 2009), and therefore a means to prevent burnout. COR theory, having been utilized in a variety of settings, is an explanatory means for evaluating burnout, as well as anxiety and other stress-related disorders. COR theory is utilized in such studies because it "can inform preventive interventions designed to help individuals increase their resource pools and thwart the threat of resource loss, mitigate its effects or even create resource-gain cycles" (Chen et al., 2009, p. 220).

People highly value time; it is a precious resource for many. When a new technology or a significant upgrade to a technology is introduced, it requires time to learn and become adjusted to the changes that are incurred. If that technology is difficult to learn or has glitches, a user can become quickly frustrated with the technology. This is even more accentuated if the user is already under a great deal of stress. Burnout is not a dichotomous variable but is considered to be a continuum, meaning that everyone falls somewhere on the scale of burnout. The combination of these frameworks will provide an opportunity to see how a person's state on the burnout scale correlates to that person's acceptance of a technology, and with a large enough sample, aims to explore correlational patterns.

Limitations of the Study

The following were some of the potential limitations identified in this particular research study. First, a limitation identified in this study was timing. Collecting data during a summer semester may have reduced the sample size due to faculty members

being away from the institution. The second limitation in this study was the response rate of participants. The design of this study used online survey links to collect data which may have contributed to a reduced response rate. Faculty may not have seen the emails requesting their participation in the study or may not have chosen to participate in the study. A third limitation in this study was that it was limited to participants at two institutions (Albany State University and Valdosta State University) of the University System of Georgia. The results of this study may not be generalizable to other states, or other groups of faculty, such as educators in K-12 or career-technical education.

A fourth limitation in this study was that it gathered self-reported "perceptions" data, which can lead to self-selection bias of faculty who view LMSs more favorably. However, a large response rate could help to mitigate any limitations created by the instrument. A fifth limitation in this study was the definitions used for online, hybrid, and technology-enhanced courses. For the purpose of this study, the definitions describing course types, such as online and hybrid, came from the University System of Georgia. Therefore, these definitions may not be the same in other educational systems, which may limit the generalizability of this study to other educational systems.

Definition of Terms

Attitude Towards Using (AT). For the purpose of this study, attitude towards using technology is defined as "the degree of evaluative affect that an individual associates with using the target system in his or her job" (Davis, 1993, p. 476).

Burnout. This study will use the definition of burnout as defined by of Ruotsalainen, Verbeek, Mariné, and Serra (2015) as:

> A persistent, negative, work-related state of mind in 'normal' individuals that is primarily characterized by exhaustion, which is accompanied by distress, a sense of reduced effectiveness, decreased motivation, and the development of dysfunctional attitudes and behaviours at work. This psychological condition develops gradually but may remain unnoticed for a long time for the individual involved. It results from a misfit between intentions and reality at the job. (p. 6)

Conservation of Resources (COR) Model. This study will use the definition of burnout as stated by Thompson (2001) as:

> [A]n integrated model of stress that encompasses several stress theories. According to the model, individuals seek to acquire and maintain resources, including objects (e.g., homes, clothes, food), personal characteristics (e.g., self-esteem), conditions (e.g., being married or living with someone provides social support, more financial security), and energies (e.g., time, money, and knowledge). Stress occurs when there is a loss of resources or a threat of loss. For example, the model proposes that work-family conflict leads to stress because resources (e.g., time, energy) "are lost in the process of juggling both work and family roles" (Hobfoll, 1989, p. 352), which in turn leads to job dissatisfaction, anxiety, and thoughts about quitting one's job. Individual difference variables, such as self-esteem, are treated as resources that may moderate the relationship between work-family conflict and stress. (p. 1)

Depersonalization (DP). For the purpose of this study, depersonalization is defined as "an unfeeling and impersonal response toward recipients of one's service, care treatment, or instruction" (Maslach, Jackson, Leiter, Schaufeli, & Schwab, 2016, p. 4).

Emotional Exhaustion (EE). For the purpose of this study, emotional exhaustion is defined as "feelings of being emotionally over extended and exhausted by one's work" (Maslach, Jackson, Leiter, et al., 2016, p. 4).

Learning Management System (LMS). For the purpose of this study, a LMS is defined as "a self-contained webpage with embedded instructional tools that permit faculty to organize academic content and engage students in their learning" (Gautreau, 2011, p. 2).

Perceived Ease of Use (PEOU). This study will use Davis' definition of perceived ease of use. Davis defined this as "the degree to which a person believes that using a particular system would be free from effort" (Davis, 1989, p. 320).

Perceived Usefulness (PU). This study will use Davis' definition of perceived usefulness, which is defined by Fred Davis as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320; Davis, 1986, p. 26).

Personal Accomplishment (PA). For the purpose of this study, personal accomplishment is defined as "feelings of competence and successful achievement in one's work" (Maslach, Jackson, Leiter, et al., 2016, p. 4).

Technology Acceptance Model (TAM). Davis (1989) developed the TAM to explain the computer usage and acceptance of information technology.

Course Categorizations

For the purpose of this study, course descriptions are broken down into the following University System of Georgia categories:

1. Fully at a distance. For the purpose of this study, online courses that are fully at a distance are defined as "generally equivalent to delivering more than 95 percent of sessions via technology" (USG Enterprise Data Warehouse, 2016, p. 44).
2. Partially at a distance. For the purpose of this study, online courses that are partially at a distance are defined as "technology is used to deliver more than 50 percent of class sessions" (USG Enterprise Data Warehouse, 2016, p. 44).
3. Hybrid Courses. For the purpose of this study, hybrid courses are defined as courses where "technology is used to deliver 50 percent or less of class sessions" (USG Enterprise Data Warehouse, 2016, p. 44).
4. Technology-enhanced [Supplemental Use (of LMSs)]. This study will utilize the University System of Georgia's definition of technology-enhanced which is when "technology is used in delivering instruction to all students in the section, but no class sessions are replaced by technology" (USG Enterprise Data Warehouse, 2016, p. 44).

Organization of the Study

As an introduction to this study, this chapter discussed a potential issue in higher education of faculty burnout potentially affecting their acceptance of technology. In order to examine how the specific burnout variables affect technology acceptance, three research questions were developed. These questions take into account a faculty member's tenure status, professional rank, and the number of years they have used an LMS.

The literature review for this study is contained in Chapter 2. This chapter first reviews the TAM and its history in research, looking at research both inside and outside of higher education. This is followed by a review on the concept of burnout, looking at stress and its relationship to both technology and faculty. The review also provides information on the Conservation of Resources (COR) theory of stress, before providing a review of the Maslach Burnout Inventory. The methodology for this study is described in Chapter 3, discussing the research design, variables examined, participants, instrument used, as well as data collection and analysis methods.

The results of the data collection and subsequent analyses are presented in Chapter 4. This chapter discusses the pre-analysis data screen process, the demographics of the sample collected, the descriptive statistics of the continuous variables, and the results of the hierarchical linear regressions on the variables associated with each research question. The discussion of the findings is presented in Chapter 5. This chapter starts with the interpretation of the findings, then covers the implications for theory, research, and practice if applicable. Finally, this chapter closes out by covering the limitations of the research study, recommendations for future research, and wraps up with a conclusion.

Chapter II

LITERATURE REVIEW

This literature review will look into the histories of the two theoretical frameworks and the theoretical lens selected for use in this study. The review will cover the seminal works and discuss the pros and cons of the frameworks. The focus of the review of each framework will narrow down eventually to studies focusing on higher education faculty with the goal of illuminating the gap in the literature that this research will attempt to address.

The Technology Acceptance Model (TAM) has been extensively researched since its inception in the 1980s. Research in this field has covered business, medical facilities, and educational environments. Higher educational faculty have occasionally been studied, but typically in this environment, most researchers have opted to focus on students (Chuttur, 2009; Legris, Ingham, & Collerette, 2002; Sun & Zhang, 2006). The same could be said for the topic of burnout. In fact, some researchers have even called burnout a 'taboo' subject when it comes to higher education and faculty (Minter, 2009). As a result, there is limited research on faculty burnout in higher education. Yet, when we combine the two topics of TAM and burnout, there is even less to be found in the literature. Conservation of Resources (COR) theory of stress tells us that burnout occurs when individuals have too few resources to cope with demands (Hobfoll, 1989, 2001). Learning and working with technology requires mental resources, and if faculty members are burned-out, they will not have the mental resources to learn (or accept) technology.

Methods

The search engines, databases, and systems utilized in this study include Georgia Library Learning Online (GALILEO) system, USG GALILEO Interconnected Libraries (GIL) Universal Catalog, EBSCOhost, Educational Research Information Center (ERIC), Chronicle of Higher Education, Electronic Thesis and Dissertations (University of Georgia), ProQuest Dissertation & Thesis, Google, Google Scholar, Norton, Yahoo, and Bing. The date range for searching the literature was from 1980 to 2017. Additional theoretical sources were pulled based on references in the theoretical literature, such as the work of Fishbein and Ajzen (1975) on which Davis' work was based. Reverse lookup was also used to find research that referenced pieces that were key to the research, such as Davis' dissertation on TAM.

The areas of focus for the review of the literature for this research study were on faculty (e.g., instructors or professors) of higher education (e.g., colleges and universities). Key search terms for the general concepts include Learning Management System (LMS), faculty, and training. The key search terms related to technology acceptance include Technology Acceptance Model (TAM), acceptance, information systems (IS) acceptance, IS usage, computer self-efficacy (CSE), information technology (IT) usage, computer learning performance, perceived usefulness, perceived ease of use, computer anxiety, and cognitive belief towards technology acceptance. The key search terms related to burnout include burnout, Conservation of Resources (COR) Theory of Stress, technology burnout, emotional exhaustion, depersonalization, and personal accomplishment.

Several of the technology journals that were included in the search were *Academy of Management Review*, *Decision Sciences*, *Information & Management*, *Information Systems Research*, *Journal of Management Information Systems*, *Journal of Organizational and End User Computing*, *Journal of the Association for Information Systems*, and *MIS Quarterly*. Journals that catered to both technology and Psychology were *Behaviour & Information Technology* and *Computers in Human Behavior*. Several of the Psychology journals that were included in the search include *Organizational Behavior and Human Decision Processes*, *Journal of Organizational Behavior*, *Journal of Occupational Health Psychology*, and *Canadian Psychology*. Additional journals that cater to education and technology were *British Journal of Educational Technology*, *Computers & Education*, *Inside Higher Ed*, and *Journal of Computer Assisted Learning*.

Technology Acceptance Model

Since the model's development in the 1980's by Fred Davis (1989), the Technology Acceptance Model (TAM) has been utilized in a wide variety of fields and been extended to include a variety of other external variables. Davis developed TAM because other measures of that time did not provide accurate or consistent results. Part of Davis' concern with other measures was the lack of validity, which he addressed through correlation and regression analyses of the results from the TAM instrument. A fundamental purpose of TAM, according to Legris et al. (2002), "is to provide a basis for tracing the impact of external variables on internal beliefs, attitudes, and intentions" (p. 192) of people using technology.

Davis did not develop TAM in a research void but based the model on several theoretical frameworks. The initial foundation was established with the theoretical work

of Schultz and Slevin (1973) and Robey (1979) looking at perceived usefulness and the impact on system utilization (Davis, 1989). The primary and most referenced foundational theoretical work of Davis' TAM is Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975). Some of the other theories incorporated into the research include an alternative expectancy-theoretic model (DeSanctis, 1983; Vroom, 1964), Bandura's (1982) self-efficacy theory, behavioral decision theory's cost-benefit paradigm (Beach & Mitchell, 1978; Johnson & Payne, 1985; Payne, 1982), adoption of innovations (Tornatzky & Klein, 1982), and the channel disposition model (Swanson, 1982, 1987).

The most influential model to Davis' work was the Fishbein model that was initially developed in 1967 and further refined in 1975 by Fishbein and Ajzen (Davis, 1986). Theory of Reasoned Action (TRA) focuses on behavioral intention, attitude, and subjective norm. TRA utilizes multiple regression to calculate the results of the surveys utilized under the model. The model is flexible in that it does not dictate specific beliefs a researcher must use. Instead, a researcher uses the model with the beliefs they have identified and desired to study.

While TRA was particularly influential, Davis rationalized the need to modify and adapt it to the specific needs of technology-based research. He added the variable Perceived Usefulness (PU), which he defined as "the degree to which an individual believes that using a particular system would enhance his or her job performance" (Davis, 1986, p. 26). This definition has remained fundamentally consistent in current research.

Another variable that he added was Perceived Ease of Use (PEOU). This he defined as "the degree to which an individual believes that using a particular system would be free of physical and mental effort" (Davis, 1986, p. 26). This definition has

remained the same, though he dropped the words 'physical and mental' from his 1989 definition. Despite this minor change, the definition remains consistent.

Both the PU and PEOU variables pointed towards the variable of Attitude Towards Using (AT) technology. Together, these three variables were considered to be user motivation towards technology and could be utilized to predict users' likelihood to utilize a system. However, as seen in Davis' model in Figure 1, both PU and PEOU could be influenced by external variables, which have the potential to affect users' attitude towards using a technology and consequently, the actual system utilization.

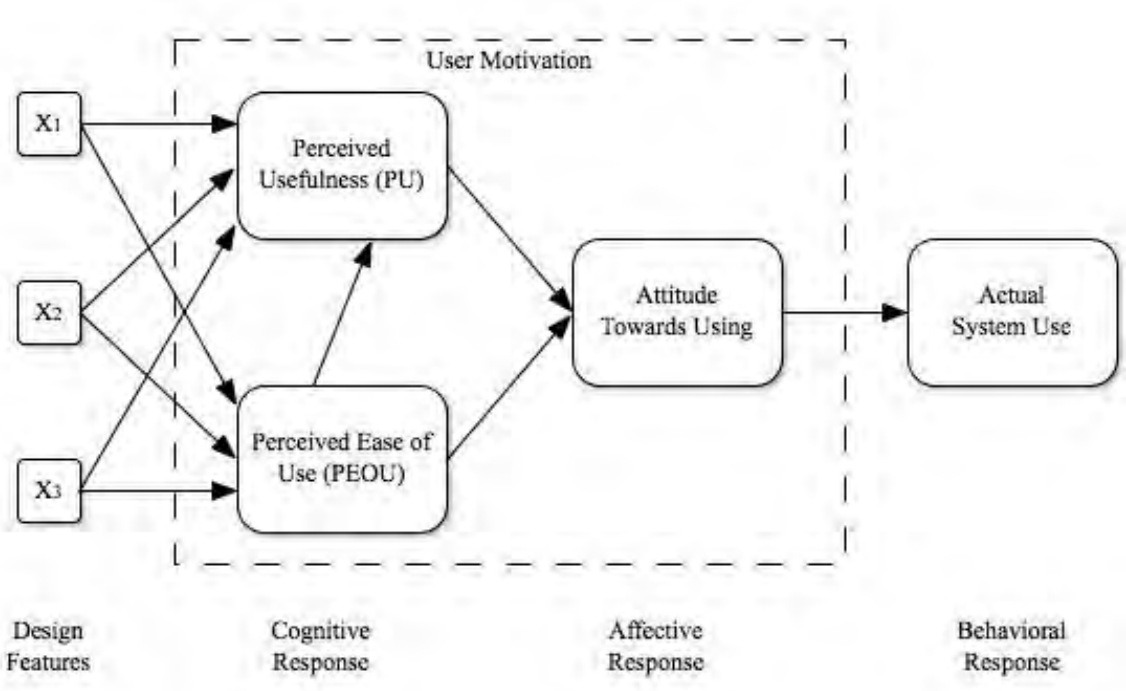

Figure 1. Davis' Original Technology Acceptance Model (Davis, 1986)

Actual system use (U) is typically evaluated by gathering logs of data from the systems being used and evaluated for the research (Szajna, 1994; Venkatesh & Morris, 2000). However, gathering system log data is not always feasible in research, and when it can be gathered, it can be very time-consuming to evaluate. Instead, many researchers,

including Davis' original dissertation on TAM (1986), have opted to gather self-reported usage, having the survey participants answer questions geared about how frequently and how much they use the system in question (Davis et al., 1989; Liaw, 2002; Venkatesh & Davis, 2000; Wei & Zhang, 2008; Yuen & Ma, 2008). This latter method has become a generally accepted relative measure to the actual system use variable (Chau, 1996; Fishbein & Ajzen, 1975; Lee et al., 2005).

However, results from multiple studies have shown a wide variation in the reported Cronbach alphas of the actual system use variable. In some cases, this has been attributed to the fact that the usage of the technology in question is not voluntary, but mandatory that employees use it (Brown, Massey, Montoya-Weiss, & Burkman, 2002; Venkatesh & Davis, 2000). When the technology is so much a part of a person's job description that they would not be able to complete their job duties without utilizing the system, it can be said that the use of the system is mandatory. In these cases, the attitude towards using (AT) variable becomes the better indicator of the acceptance of the technology (Fathema et al., 2015; Hu, Chau, Sheng, & Tam, 1999; Malhotra & Galletta, 1999, January) since the users are required to use the system regardless of their level of acceptance.

Since 1986, when Davis' dissertation was published, TAM has seen multiple iterations and variations. Researchers have run the model through its paces, establishing a sound track record of reliability and validity (Adams, Nelson, & Todd, 1992; Davis, 1989; Hendrickson, Massey, & Cronan, 1993; Segars & Grover, 1993; Subramanian, 1994; Szajna, 1994). Not every attempt has been successful, especially in international use cases where there is a significant cultural difference from the original population with

which it was developed (Agbatogun, 2013; Averweg, 2008; Hu et al., 1999). Nonetheless, TAM has a stable and robust reputation as a reliable and valid method of evaluating the acceptance of technology in both the work environment (Chau, 1996; Gefen & Straub, 1997; Hebert & Benbasat, 1994; Lee, Hsieh, & Chen, 2013; Morris & Venkatesh, 2000) and the school setting (Fathema et al., 2015; Holden & Rada, 2011; Sahin & Thompson, 2007; Teo, Lee, Chai, & Wong, 2009).

Researchers have gone beyond merely using the standard version of TAM. Alternate versions (Venkatesh, 2000; Venkatesh & Davis, 2000; Venkatesh, Morris, Davis, & Davis, 2003) and extensions (Davis et al., 1989; Igbaria, Zinatelli, Cragg, & Cavaye, 1997; Saadé & Bahli, 2005; Venkatesh & Davis, 1996) of TAM abound. Some researchers have scolded the research community for developing extended versions that do not truly add to the body of IT literature (Benbasat & Barki, 2007).

Utilization of TAM outside of Higher Education

In 1989, Davis published the results from additional research he had conducted using TAM. In these research studies, the focus was on refining TAM with a purpose of pursuing "better measures for predicting and explaining use" (p. 320) of technology, while also testing reliability and validity. This particular publication discussed the results from two separate samples. The first was a field study, which obtained data on a voluntary basis from IBM Corporation employees based in Canada's Toronto development lab. The second sample group was a lab study where Masters of Business Administration (MBA) students at Boston University were paid to participate. The results from these studies further validated TAM as a useful and reliable instrument for measuring perceived usefulness and perceived ease of use. However, Davis concluded

that additional research was still necessary to provide evidence that findings from such research can be generalizable.

Davis continued to research different populations with TAM. He published research findings in 1993 from a study focused on a large North American corporation where 112 professional and managerial employees had participated. This study focused on the attitude towards using technology, utilizing the original model of TAM from his dissertation. In this study, Davis incorporated questions about the frequency of use and the amount of time spent utilizing the system specified in the study. According to Davis and prior researchers (e.g. Ginzberg, 1981; Robey, 1979), these questions are typical in MIS research for gathering usage metrics. The results from this study showed a need for additional research regarding extrinsic and intrinsic motivators towards user acceptance. Davis noted in his research that this need could potentially be achieved through additional variables (Davis, 1993).

Nurses working in hospitals were the focus of the study by Hebert and Benbasat (1994). This study extended TAM by adding in the variable of voluntariness. The sample was a convenience sample, so there was room for selection bias. They did not find perceived ease of use to be a significant factor in this study but stated that "most technology choices are made for the organization as a whole, and policy on its use then dictates [user] behavior" (p. 379). According to Ajzen and Fishbein (1980), before behavior can be changed, it must first be understood. Therefore, it is essential for us first to find out if an issue of interest, such as burnout, affects technology acceptance before attempting to address that issue through training.

Chau (1996) modified and extended TAM, adding perceived long-term usefulness to the model, but removing the "attitudes" factor, which has frequently been taken out under the premise of simplifying the model (Adams et al., 1992; Lu & Gustafson, 1994). Chau stated that TAM was used for this study because it has been one of the most influential models in the field of Information Systems (IS) and it has been empirically proven to have high validity. It was also mentioned that TAM is simpler to implement than Theory of Planned Behavior (TPB). While the results from this study provide evidence of validity and reliability, there were a few limitations. Because the model used was extended, it did not precisely fit TAM. The dependent variable for this study was Behavioral Intention (BI) instead of Attitude towards using (AT). Additionally, as with most TAM research, the data collected was self-reported.

Gefen and Straub (1997) examined the airline industry with a cross-cultural perspective. This study had participants from North America, Asia, and Europe. The focus of this study was on gender differences with technology acceptance, and so the TAM was extended to include the gender variable. The variable of gender was measured as a biological variable. The results from this study showed that men and women might both use a technology, but their perceptions about the technology differ. This goes as far as both groups can perceive the same method of communication differently, and this finding held across cultures. The implications of this study include a need for future studies to account for gender effects on information technology constructs.

Psychological attachment was used to extend TAM by Malhotra and Galletta (1999, January) in their study focusing on employees at a U.S. based national healthcare organization located in the Midwest region of the country. The participants of this study

went through training on a new email system. The researchers based their extension on Kelman's (1958, 1961) work on psychological attachment and social influences. Based on this theoretical foundation, they theorized that "social influences may affect behavioral intention indirectly through attitudes" (p. 4). The outcome of this study was that attitudes could be a key to acceptance and utilization.

Hu et al. (1999) used a "reduced" version of TAM, excluding actual behavior, in their research on physicians at hospitals in Hong Kong. Participants were selected on the basis of their involvement with telemedicine programs. Compared with many other reported TAM research results, TAM's power to explain was extremely limited in this particular study. The researchers theorized that it could be due to the nature of the particular user group selected for study. Research by Hu et al. (1999) indicated that "TAM may not be appropriate for user populations who have considerably above-average general competence and intellectual capacity or have constant and reliable access to assistance in operating technology" (p. 106). Other limitations included the voluntary nature of the study, which may lead to self-selection bias in addition to cultural differences.

Customer account representatives of a medium-sized financial accounting firm in the American Midwest were the subjects of a study by Morris and Venkatesh (2000). This particular study looked at the differences in age and how it affected individual adoption of technology as well as continued usage of said technology in the work environment. The primary framework for this study was Theory of Planned Behavior, which can be viewed as a sibling theory to TAM. These two theories have frequently been compared/contrasted, and occasionally merged. The results of this research have

shown that age affects both technology adoption and its continued usage over time. The older workers are, the more they tend to be influenced by social norms at the beginning phase of adoption. However, once internalization occurs, social norms have less influence on continued usage.

Venkatesh and Davis (2000) published the results from a series of studies where they had implemented an extended version of TAM known as TAM2. The studies were longitudinal with data collected from four organizations, for a total of four different technologies. Because TAM2 is extended to include voluntariness in the model, two of the organizations' technology implementations were voluntary usage, and two were mandatory usage. Other variables this model included were subjective norm, image, job relevance, output quality, result demonstrability, and experience. The types of organizations included in the studies were a manufacturing firm, a financial services department, an accounting firm, and an international investment banking firm. The samples came from floor supervisors and members from all levels of the organizations' hierarchies. The results of these studies had high reliability and validity. The TAM2 model was strongly supported and provided detailed account of the critical forces underlying perceived usefulness. The limitations the authors noted were: small sample sizes, several variables of the model were measured with only two items in the survey instrument, and the usage was self-reported. These studies did not include any experimental manipulation of the theoretical constructs, and they used a variance theory approach.

For the purposes of this research, TAM2 was not selected for utilization because social norm is not of interest. Additionally, the system being studied is already in use and

is a standard platform in the University System of Georgia (USG). Finally, new updates to the platform are the largest changes in the system, and those updates come from the USG Information Technology Services (ITS) offices, are system-wide, and are therefore mandatory, not voluntary on the part of an individual instructor.

Also in 2000, Venkatesh published with Morris on the results from a longitudinal study of five organizations that had voluntary use of newly implemented technology. The focus of this study was on gender differences in technology acceptance and therefore required an extended version of TAM. The researchers chose to continue to use TAM even though the extension was needed, stating that TAM "offers a powerful and parsimonious explanation for user acceptance and usage behavior" (Venkatesh & Morris, 2000, p. 116) and because the model had been well established as robust through repeated application and replications. The results from this research showed that men consider perceived usefulness more than women, whereas women are more affected by perceived ease of use. These results supported the concept of the extended TAM. It was also recommended that future research examine both gender and age in a single study.

A study by Brown et al. (2002) evaluated if the relationships that have repeatedly been documented in TAM for explaining technology acceptance still hold true in mandatory-use environments. The prior research behind the focus of this study stated that employees can delay or obstruct efforts to implement a new system and that they may resent, underutilize, or sabotage that system when they do not accept it (Leonard-Barton, 1988; Markus, 1983; Zuboff, 1988). Therefore, attitude was deemed a primary component of this particular study. The findings indicated that there was a definite link between perceived usefulness and attitude. However, because of the mandatory nature of

the implementation, there was no significant relationship found between attitude and behavioral intention to use the system. One limitation of this study was that it was restricted to members of one organization in the financial industry. Additionally, it only focused on one system, so the results may not be generalizable to the higher education sector. This study also only focused on the core constructs of TAM and did not extend the model. There may be other factors that affect attitude towards and behavioral intention to use.

The researchers stated that "attitudes matter more than intentions when technology is mandated" (Brown et al., 2002, p. 294). However, this particular study was conducted over a decade before the current research, so the concept of "mandatory use" back then may not be what it is now. Technology has been embedded into most job descriptions. Additionally, the particular issue focused on in this proposed dissertation research is looking at a technology that is already in place and has been accepted, for the most part, as the standard for the USG. The biggest issue for faculty at this point is the upgrades that the system receives and how those updates affect the workflow that they have already established. So, in this scenario, the "mandatory" part of the situation is the mandated upgrades to the newest version of the LMS.

In contrast, Chau and Hu (2002) found that attitude had a significant, direct effect on intention to use in their study of over 400 physicians in public tertiary hospitals in Hong Kong. This study used a modified and extended version of TAM, where the researchers supplemented the model with factors they drew or modified from other relevant theories or models. They used intention to use the system instead of actual use (AU) to explain actual behavior because of previous research that has an established

theoretical foundation as well as the amount of accumulated empirical support (e.g. Sheppard, Hartwick, & Warshaw, 1988; Venkatesh & Morris, 2000). This study was limited by its single-study design. It also did not address potential individual diversity within the population. The model was revised and needs more testing before results can be generalizable. Also, the definition used by the researchers for 'telemedicine' had a broad scope.

Results from a longitudinal study of public school teachers in Hong Kong and their acceptance of Microsoft PowerPoint was published by Hu, Clark, and Ma (2003). This study utilized an extended version of TAM, where attitude was dropped from the model, and the variables of job relevance, compatibility, computer self-efficacy, and subjective norm were added. Behavioral intention to use Microsoft PowerPoint was the dependent variable. They found that the teachers in this study were more likely to view a technology as useful when they could see how that technology was relevant to their job. Once the teachers saw relevance and usefulness, they were more likely to accept the technology.

Enterprise Resource Planning (ERP) systems have been the subject of many Information Systems research studies for the past several decades. Amoako-Gyampah and Salam (2004) used an extended version of TAM to evaluate the technology acceptance of a new ERP in a large global organization that spanned the U.S. and surveyed members across the organizational chart. They expanded TAM by adding one belief construct and two external variables, which were training and project communication. They were evaluating how these added variables would affect the core variables of TAM. Despite the fact that previous research found no significant

relationship between attitude and behavioral intention to use in a mandatory-use situation, this research provided evidence that "it is appropriate to examine behavioral intention to use the technology even when the usage might be mandatory" (Amoako-Gyampah & Salam, 2004, p. 736).

Ong and Lai (2006) extended TAM by adding variables to examine gender and computer self-efficacy. The study included six international companies with offices in Taiwan. Each company had implemented an e-learning system for the employees to utilize. The limitations of this study were a) that it was a single study, b) responses were voluntary and therefore subject to self-selection bias, and c) it was not longitudinal. The findings from this study were threefold. First, men need to perceive a system as useful in respect to enhancing job performance or productivity. Second, perceived usefulness had a significant direct effect on behavioral intention to use, but only for men. This finding points to the importance of user-friendliness in the e-learning system's ability to be successful. The third finding was that computer self-efficacy was a salient factor for women.

A study conducted in South Africa by Averweg (2008) evaluated the acceptance of an Executive Information System, which was implemented in 31 organizations in the region of KwaZulu/Natal. The original TAM was used, and unbiased 'snowball' sampling was the technique used to gather data. However, the results of this study did not have good reliability. The researcher stated that one must "consider the influence of local conditions on the adoption and assimilation of technologies in developing countries" (p. 45). Averweg (2008) suggests that TAM did not translate across to this particular cultural setting.

Teo et al. (2009) used TAM as the framework for their study on pre-service teachers in both Singapore and Malaysia. This study showed TAM to be robust across cultures. However, there were limitations in the design of this study. The researchers used a convenience sample, which could indicate possible self-selection bias. The sample selected of pre-service teachers may not fully understand the demands on practicing teachers, and so the results may not be generalizable to the broader teaching community. Also, pre-service teachers do not use technology the same way in-service teachers would. Despite these limitations, the researchers found a relationship between attitude and intention to use the technology, which is supported by prior research that has suggested that attitude is a significant predictor of intention to use (Venkatesh et al., 2003).

Holden and Rada (2011) examined the technology acceptance of K-12 teachers in rural schools located in Virginia with a version of TAM that was extended with technology self-efficacy, computer self-efficacy, and four usability metrics. The researchers felt that TAM needed to be extended because they viewed the model as critically limited by "its lack of emphasis on the system characteristics, which may influence user acceptance, as in usability evaluations" (p. 345). Part of the motivation of this study was that prior research in this field has seldom evaluated the psychological characteristics of users at the same time as assessing the technology acceptance of users, which indicates a need for more types of evaluations that add various psychological constructs to the TAM framework. The results from this particular study showed that student attitudes about technology were significantly affected by the attitudes of their teachers.

Many of the limitations of this study were similar to the limitations from previous TAM studies, such as the data collection method. However, one limitation that the researchers note was that they did not use structural equation modeling (SEM) for the analysis of the data. They stated that while SEM was the most common technique utilized in TAM studies, it was not appropriate for the types of variables included in this particular study.

Lee et al. (2013) conducted a study using an extended version of TAM that evaluated 12 firms in Taiwan. The firms studied included three firms in manufacturing, three in marketing and service, three in information technology, and three in government agencies. Each firm had already implemented an electronic learning system, and the research survey instrument was distributed to employees at different levels of the firms' hierarchies. The researchers used TAM as their baseline model, then extended it by adding additional user-related variables, to see the potential to influence the use of the systems in organizations. The variables included in the extension were organizational support, computer self-efficacy, prior experience, and task equivocality. Prior research has indicated that attitude is the most influential predictor of behavioral intention to use a technology. Based on prior research and the results from this study, the researchers suggest that individual characteristics of users, organizational factors, and task attributes be taken into consideration by educational technology researchers. This knowledge can aid in developing and validating theories of educational technology acceptance.

Utilization of TAM in Higher Education

In the realm of higher education, there has been numerous studies devoted to TAM related research. However, a majority of the subjects in these studies have been

students. The technology for these studies have ranged from basic productivity software such as email and word processing packages (Bagozzi et al., 1992; Davis et al., 1989; Liaw, 2002; Szajna, 1996; Thompson et al., 2006), the internet (Agarwal & Prasad, 1997; Gefen et al., 2003; Liaw & Huang, 2003; Liaw, 2002; Wei & Zhang, 2008), digital libraries (Kim, 2005; Weiyin et al., 2002), and a variety of online based learning systems (Dasgupta et al., 2002; Gong et al., 2004; Ifinedo, 2006; Lau & Woods, 2008; Lee et al., 2005; Saadé & Kira, 2006).

TAM was utilized in these studies in a variety of ways. Some studies utilized TAM as a baseline model for the research or compared it with similar models (Bagozzi et al., 1992; Davis et al., 1989; Lau & Woods, 2008). However, many more studies have used modified or extended versions of TAM. Common modifications to the model have been to exclude the attitude variable (Gefen et al., 2003; Ifinedo, 2006; Kim, 2005; Szajna, 1996) or the intention to use variable (Saadé & Kira, 2006). Some of the extensions to TAM have included social norms (Agarwal & Prasad, 1997; Bagozzi et al., 1992; Davis et al., 1989; Kim, 2005), computer or technology specific self-efficacy (Gong et al., 2004; Ifinedo, 2006; Liaw, 2002; Wei & Zhang, 2008; Weiyin et al., 2002), facets of anxiety (Ifinedo, 2006; Saadé & Kira, 2006), and motivation (Lee et al., 2005; Liaw & Huang, 2003; Liaw, 2002).

TAM research that has been focused on higher education faculty is much less common than the research on students. Tetiwat and Huff (2002) used a model that combined TAM with Theory of Planned Behavior and Innovation Diffusion Theory to research the determinants behind faculty's adoption of web-based educational technology in New Zealand universities. The findings from this study provided five influential

factors behind technology adoption, which were access to technology, availability of technology, compatibility, relative advantage, and student demand.

A modified version of TAM was used by Ball and Levy (2008) to evaluate instructors at a small, private university in the southeastern United States. TAM was modified and extended for this particular study, with the additional variables of computer self-efficacy, computer anxiety, and prior experience with the use of technology. The results of the study showed that computer self-efficacy had the most influence on the instructors' intention to use technology.

Technologies change and are replaced over time. However, there is even less research on the technologies that replace older systems. To begin addressing this gap, Zhang and Xu (2011) evaluated faculty at an urban, public university in the northeastern United States. The institution was in the process of replacing their course management system with WebCT (a LMS competitor of D2L). The researchers used TAM extended with mental models so that they could evaluate the faculty's cognitive nature of their previous experience and how it affected the acceptance of the new technology. The findings from this research showed that when replacing a legacy technology with a newer system, it is important to assist the end users in seeing that the newer system is compatible with the mental model they have formed about the older system. The more that the end user can translate their mental model from one system to the other; they will become more accepting of the newer technology. This particular study highlighted the importance of IT-related training and how it should be designed to take end-users' experiences into account.

Agbatogun (2013) utilized an extended version of TAM known as Unified Theory of Acceptance and Use of Technology (UTAUT) to examine faculty employed with southwest Nigerian Universities. The results of this study contradicted some prior research by Jenkins, Mimbs, and Kitchel (2009) that suggested that teachers might utilize a variety of technology with the intention of enhancing the effectiveness of classroom instruction. However, other findings in this study supported prior research such as how teachers may be unable to successfully integrate technology into their instructional process unless they acknowledge that the technology can be an instructional tool (Hokanson & Hooper, 2000; Mueller, Wood, Willoughby, Ross, & Specht, 2008). As well as the need for administrative and technical support to be available to teachers so that they can successfully integrate the technology (Hernández-Ramos, 2005). Another finding of this research that supported prior research was that technology acceptance and use is affected by age, specifically younger instructors are better at adopting and utilizing technology (Liang & Chao, 2002).

Fathema et al. (2015) conducted a study on post-secondary institutions switching LMSs from Blackboard to Canvas. Adding three external variables of system quality, perceived self-efficacy, and facilitating conditions extended the original model of TAM used for this study. The findings showed that all three variables significantly predicted faculty's attitudes towards LMSs. This indicates that the quality of the system is important to faculty members, and continuous improvement is important. It also indicates that training and support are important to help increase faculty's self-efficacy with the system in question.

As mentioned previously, TAM is a model that has been extended by multiple researchers over the years. It has been stated that TAM is a model that lends itself to extension because it "provides a basis for tracing the impact of external variables on internal beliefs, attitudes, and intentions" (Legris et al., 2002, p. 192). Multiple researchers suggest that by extending TAM, it can lead to explaining a significantly higher percentage of system utilization (Agarwal & Prasad, 1997; Lucas & Spitler, 1999; Szajna, 1996).

Researchers have recommended these extensions of TAM to help with some of the model's limitations. One recommendation is to increase TAM's predictive capabilities by integration it with a model that includes other factors, such as social and organizational (Legris et al., 2002). One weakness of TAM is the assumption that if the end-user intends to act using the designated technology, that there will be no limitations or impediments (Bagozzi et al., 1992). Some limitations or impediments may be technologically based. However, this research contends that burnout can be an impediment that resides with the end-users.

The contention is that awareness and acknowledgment of this issue exists and can affect effective utilization of a technology is a key first-step in rectifying the issue. Once known and acknowledged, steps can be taken by technical trainers to develop training in an attempt to reduce the cognitive load (McClusky, 1963) on the faculty. Reducing the cognitive load will help faculty conserve their mental resources, thereby reducing the risk of burnout.

Burnout

In modern history, many people have assumed that higher education faculty 'have it made,' especially if faculty are tenured. Perhaps on a few rare occasions, this was the case. However, new developments and changes in laws and regulations in the realm of education at both the state and federal level, along with enormous leaps and bounds in technology, have drastically shifted the face of higher education within the last forty years. These shifts have drastically increased the load on the average university instructor.

Howard McClusky's *Theory of Margin* (1963) introduced the concepts of 'load' and 'power' in relation to the psychology of adults. Load, as defined by Hiemstra (1993), consists of external factors, such as family and work, and internal factors like one's aspirations and desires. Power is a person's ability mentally, emotionally, and physically to deal with everything coming at them at a given time. The difference between the concepts of 'load' and 'power' is the 'margin.' The more external and internal factors present, the less 'margin' a person has to deal with all that is expected of them. For faculty, the changes that occur in higher education add to the external factors, placing additional pressure on them. Increased pressure from administration to increase student grades and retention levels, along with the changes in laws and regulations, coupled with the changes in technology may cause a drastic decrease in faculty's ability to cope. This is a pattern that can create stress for a faculty member that, if prolonged, may lead to burnout (Maslach & Jackson, 1981; Schaufeli, Enzmann, & Girault, 1993).

In 1974, the psychoanalyst Herbert J. Freudenberger introduced the term *burn-out* to the field of psychology as a way to label specific physical and behavioral symptoms

experienced by people. Using the dictionary, he defines this term as "to fail, wear out, or become exhausted by making excessive demands on energy, strength, or resources" (p. 159). He lists a variety of physical and behavioral signs that may manifest in any number of combinations. These signs include fatigue, headaches, sleeplessness, risk-taking behavior, and changes in attitude (Freudenberger, 1974, 1975). In a 1977 article, he further describes burnout as an organizational menace. He cites additional signs such as rigidity, irritability, cynicism, and unproductive effort as indicators of burnout in organizations (Freudenberger, 1977).

Since the term's introduction, many studies have been conducted, growing the area of research into a robust field of burnout. Maslach and Jackson (1982) describe burnout as a result that can develop from chronic emotional stress, defining it as "a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment" (p. 288). Research has linked burnout to stress; however, not all stressors result in burnout. Elliott and Eisdorfer (1982) recommended four categories of stressors: (a) acute, time-limited stressors; (b) stressor sequences; (c) chronic, intermittent stressors; and (d) chronic stressors. This final stressor category is where burnout is most likely to occur, as the person experiencing the continuous chronic stress will be most vulnerable to burning out (Cordes & Dougherty, 1993). Stress, and consequently burnout, affects people in a significant way, especially since stress is connected to mental health as well as having potential links to physical ailments (Hobfoll, 1989).

Kahill (1988) states, based on a meta-analysis of prior research, that there are five major categorical groups for the types of symptoms of burnout. These are physical, emotional, behavioral, interpersonal, and attitudinal symptoms. Burnout has been linked

to reduced physical health, and research has shown relationships to sleep disruptions, stomach and colon issues, headaches, and many other ailments. Emotionally, symptoms linked to burnout have included anxiety, guilt, and depression. Behavioral symptoms can be broken into two subcategories of work-related behaviors and consumption behaviors. The former can include poor performance, absenteeism, and theft at work, while the latter may display as alcohol, drug, or caffeine intake. Interpersonal symptoms may display at work or in one's personal life. These symptoms may occur with co-workers or clients and may be described as escaping or avoiding work. In one's personal life, the number of friends may decrease, and negative emotions may affect family members. Attitudinal symptoms may include negative attitudes towards other themselves. The person displaying these symptoms may be very cynical, pessimistic, or defensive. They may also have feelings that they lack in personal effectiveness or accomplishments.

Stress and Technology

A growing area of stress- and burnout-related research has focused on the field of technology. Researchers have studied and demonstrated in a variety of settings that technology has the ability to influence the mental health and well-being of the users (Bohlin & Hunt, 1995; Crable, Brodzinski, Scherer, & Jones, 1994; Day, Paquet, Scott, & Hambley, 2012; Igbaria & Chakrabarti, 1990; Jones & Wall, 1989; Kalimo & Leppänen, 1985; Kay, 1990; Majchrzak & Borys, 1998; Okebukola, Sumampouw, & Jegede, 1992; Todman & Monaghan, 1994). However, as far as this researcher can tell, very limited research looking at how mental health status affects users' technology acceptances has been conducted. More research is needed to understand the relationships between mental

health and technology because "the relationship between exposure to technology and the worker's health and well-being is rather complex" (Salanova & Schaufeli, 2000, p. 385).

Research by Wood (2001) showed that employees might develop negative feelings for a technology if the organization expects them to master that technology, especially if that technology is complex. Additionally, research by O'Driscoll, Brough, Timms, and Sawang (2010) brought up the importance of organizations providing support or rewards to employees to increase engagement with new technologies. Such support can include employee training on the technology to improve their confidence in using the technology efficiently (Beas & Salanova, 2006). Day et al. (2012) found that if an organization continues to give its employees a new technology, but if the technology is faulty or has reoccurring problems, then for the employee the stress is just the same as if they never received the technology in the first place. Meaning that any gains provided by the technology are lost against the issues that arise when the employees try to use the technology.

A study by Fuller, Vician, and Brown (2006) evaluated undergraduate students at a larger, Midwestern university in the United States. This study looked at the role that computer anxiety and communication apprehension had on students' participation with the technology portion of their course. The results of the study showed that computer anxiety contributed a great deal to the amount students used email.

Knani (2013) conducted a study at an institution implementing Banner, a student information system (SIS), and found that the employees experienced a perception of increase in job demand, stress, and exhaustion, as well as both absenteeism and presenteeism. Presenteeism is described as when an employee is sick but comes to work

despite the illness. This causes a longer recovery time from the illness and also decreases the employee's effectiveness. Knani (2013) found a correlation between an increase in presenteeism and turnover rates. Knani (2013) also found that the employees who were having to use the new technology were more likely to feel stress as well as emotional exhaustion and psychological distress. The findings of this study showed that implementing new technology can have detrimental effects on the employee's health (both physical and mental), job satisfaction/commitment, and productivity.

Stress and Faculty

Compared with the amount of stress and burnout related research conducted in the corporate realm, there is very little research on stress and burnout of higher education faculty (Hogan & McKnight, 2007; McCann & Holt, 2009; Minter, 2009). However, these issues are considered to be a severe concern for faculty in higher education (McCann & Holt, 2009). Kemery, Mossholder, and Bedeian (1987) evaluated faculty, staff, and administration at a large southeastern university in the United States and found that two sources of stress (role conflict and ambiguity) can exert a direct influence on both job satisfaction and physical symptoms. Consequentially, these can influence the intention of personnel to leave an organization.

Role conflict was also examined by Rabinowitz and Stumpf (1987) in relation to university faculty. They examined four facets of role conflict, which are person-role, intra-sender, inter-sender, and overload. Their findings showed that the four facets of role conflict related differently to the role-specific performance outcomes of faculty. The specific performance outcomes that they evaluated for the faculty were instructional evaluation, research productivity, and administrative activities. The latter two were rated

separately by both peers and superiors, for a total of five outcomes. The findings provided evidence as to why prior research on stress as it related to faculty performance, might have conflicting results, and also showed that stress in higher education is a complicated issue.

Stress and burnout levels for instructors who teach online may be even higher than those who teach face-to-face classes. Dunlap (2005) called attention to two stressors related to online learning that can potentially contribute to burnout. One stressor is if an instructor feels the need to constantly be online to address student needs, which can contribute to exhaustion. The other potential stressor is the environment that an instructor is expected to use. If the system is complex, it can lead to frustration, stress, and potentially burnout. Also, according to Hislop and Ellis (2004), there may be a historical stigma associated with teaching online, as faculty may see it as more time and labor intensive. Other influencing factors that may impact faculty are their individual beliefs (Albion & Ertmer, 2002), feelings of anxiety, fear, and competence (Dusick, 1998; Dusick & Yildirim, 2000), as well as preferences and perceptions (Grasha & Yangarber-Hicks, 2000).

Research by Hogan and McKnight (2007) examined online faculty in higher education. Their study examined the impact of gender as it related to burnout. They also compared their data with the normative data from educator burnout. The findings of the study revealed an average score on the MBI-ES subscale for emotional exhaustion; however, there was a high degree of depersonalization and a low degree of personal accomplishment, indicating that online instructors experience some degree of burnout.

A similar study conducted a few years later by McCann and Holt (2009) showed a lower score for emotional exhaustion. The researchers believe that this demonstrated that it was improving with time. One reason they suggested may be due to the standardization of learning management systems (LMSs) that institutions are using. The more standardized the systems become, the easier it is for instructors to utilize the platforms as they become familiar with the system.

In his mixed-methods research on adjunct faculty burnout, Bates (2012) stated that if one dimension of burnout is present, it "is likely to indicate the presence of another dimension" (2012). The findings of the research showed that exhaustion might occur from issues such as classroom-related stress and workload. Issues such as lack of interest, boredom, and monotony are indications of depersonalization, and poor student performance can affect an instructor's feelings of personal accomplishment. Bates (2012) also found that negative interactions with department personnel, lack of interaction with supervisors, and even the size of the institution and department are all potential risk factors for faculty burnout. Potential impacts from faculty burnout include poor job performance, as well as negatively affecting student learning (Bates, 2012; Chauhan, 2009; Pillay, Goddard, & Wilss, 2005; Vahey, Aiken, Sloane, Clarke, & Vargas, 2004).

Conservation of Resources

The theoretical lens for viewing burnout in this study is the Conservation of Resources (COR) theory of stress that was developed by Hobfoll in the late 1980s. Hobfoll defines stress, specifically psychological stress, as "a reaction to the environment in which there is (a) the threat of a net loss of resources, (b) the net loss of resources, or

(c) a lack of resource gain following an investment of resources" (Hobfoll, 1989, p. 516). Knowing that burnout can occur as a result of chronic stress, we can tie the COR theory to the concept of burnout as a means of addressing the resources, or lack thereof, as a root cause of burnout. In the case of higher education, we can view change in technology as a threat to faculty's resources.

Since its development, COR theory has repeatedly been utilized as an explanatory means for evaluating burnout and closely related topics, such as post-traumatic stress disorder (PTSD), and in a variety of settings (Brotheridge & Lee, 2002; Grandey & Cropanzano, 1999; Halbesleben, 2006; Hobfoll, 2001; Hobfoll, Vinokur, Pierce, & Lewandowski-Romps, 2012; Howard & Krannitz, 2017; Janssen, Schaufelioe, & Houkes, 1999; Lee & Ok, 2014; Shirom, 1989; van Woerkom, Bakker, & Nishii, 2016; Westman & Eden, 1997; Wright & Cropanzano, 1998; Wright & Hobfoll, 2004). COR theory builds on the works of Charles Spielberger (1966a; 1966b; 1972) and other psychologists. These prior works suggested that events can be categorized as stressful if a person views the events as a threat to either the physical or phenomenological self. Based on this concept Hobfoll (1989) stated: "people strive to retain, protect, and build resources and that what is threatening to them is the potential or actual loss of these resources" (p. 516). Examples of resources are *objects* such as ownership of a house or a car; *conditions* such as one's marital, tenure, or seniority status; *personal characteristics* such as one's orientation towards the world; and *energies* such as time, money, and knowledge (Hobfoll, 1989).

According to Hobfoll (2001), most burnout research utilizing COR as a lens focuses on the third stress condition of COR theory. This condition states that stress

occurs “when individuals fail to gain sufficient resources following significant resource investment” (p. 342). An example that one might see in higher education may be if a new technology is introduced to the faculty and staff without adequate training accompanying the release. Employees may exhibit higher levels of stress and burnout if they struggle to learn and use the technology, only to have it not produce the expected outcomes required for their daily functions.

Maslach Burnout Inventory

Recognized as the leading measure of burnout, the original version of the Maslach Burnout Inventory (MBI) was released in 1981 to address the need for a standardized measurement for researching the concept of burnout (Maslach, Jackson, & Leiter, 2016). The original MBI and several variations of the MBI have been given to thousands of people throughout the world, in multiple languages, and in a wide variety of work settings (Maslach, Jackson, & Leiter, 2016). While the various versions of the MBI do not utilize the exact same three variables, the concept of burnout is considered to be a continuous variable in which experienced feelings range from low to high. The survey emphasizes that burnout “is not viewed as a dichotomous variable, which is either present or absent” (Maslach, Jackson, & Leiter, 2016, p. 1).

The Maslach Burnout Inventory Educators Survey (MBI-ES) was designed specifically for surveying personnel working in educational settings. This variation of the MBI was one of the first variants and was developed within a few years of the release of the original MBI. The primary difference between the original and the MBI-ES was the replacement of the word “recipient” with the word “student”. The MBI-ES has been demonstrated to have consistently good internal reliability throughout the decades by

researchers such as Iwanicki and Schwab (1981), Gold (1984), Kokkinos (2006), and Chang (2013). Test-retest reliability has shown the stability of the instrument over time, as has been demonstrated by Jackson, Schwab, and Schuler (1986), Schwarzer and Hallum (2008), Pas, Bradshaw, and Hershfeldt (2012), and Hultell, Melin, and Gustavsson (2013). Finally, works by Byrne (1994), Koustelios and Tsigilis (2005), Lambert, McCarthy, O'Donnell, and Wang (2009a), Chang (2013), and others have repeatedly established the validity of the MBI-ES.

Leiter and Maslach (1988) conducted a study on nurses and support staff in a small, private hospital in Northern California. In this study they combined the MBI with three other instruments, which were Role Conflict as developed by Rizzo, House, and Lirtzman (1970), the short version of the Organizational Commitment Questionnaire by Mowday, Steers, and Porter (1979), and an Interpersonal Contacts procedure developed by Leiter and Maslach (1986). Findings from this research suggested that a major source of distress and frustration can come from contact with other people. Findings also showed that people who are high in organizational commitment tend to spend time with co-workers who had similar results on that scale. For employees with high results on the depersonalization scale of the MBI, Leiter and Maslach (1988) point out that interactions with supervisors that are stressful can increase emotional exhaustion which can contribute to depersonalization, and eventually affect the employee's level of personal accomplishment.

In another study, Leiter (1991) combined even more instruments with the MBI which included the Organizational Commitment Questionnaire (Mowday et al., 1979), interpersonal conflict, work overload, skill utilization, a contact rating scale (Leiter &

Maslach, 1988) (containing a support score for both supervisor support and co-worker support), and a coping survey (Latack, 1986). This study was conducted at a mental hospital in Nova Scotia, Canada and surveyed 177 staff members. Results from this study showed that a person's coping patterns could be used in the prediction of burnout for that person, especially for the emotional exhaustion component.

In a contribution to a book on the topic of burnout, Leiter (1993) compared the MBI to the Phase Model by Golembiewski and Munzenrider (1988). In contrast to the MBI that provides a three-component definition of burnout, the Phase Model was designed with the intention of reducing the MBI down to one measure with eight phases. Leiter acknowledges that this can allow measurements for large aggregates, as well as the potential severity of an individual case of burnout. However, two people can be at the same phase of the Phase Model but have reached that phase through different means. This shows that there is a loss of context with the Phase Model being distilled down to one measure.

Lee and Ashforth (1993b) conducted a longitudinal study with service professionals who worked for a large public welfare agency. The agency was located in a major metropolitan county located in the Midwest. The focus of the study was to compare the Leiter and Maslach model (Leiter, 1989; Leiter & Maslach, 1988) with the Golembiewski *et al.* model (Golembiewski, 1989; Golembiewski & Munzenrider, 1988; Golembiewski, Munzenrider, & Stevenson, 1986). A primary difference between the two models of burnout was the progression in which burnout occurs. According to the first model, the progression occurs from emotional exhaustion to depersonalization and then to lack of personal accomplishment; while the latter model said that the progression

occurs from depersonalization to lack of accomplishment and then to exhaustion. The two models were conflicting over which burnout variable comes first in the cycle, exhaustion or depersonalization. However, the results of the research by Lee and Ashforth (1993b) was best suited by a revised version of the Leiter and Maslach model which showed that the variable of exhaustion mediated between three antecedents included in the study, as well as the other two dimensions of burnout. They also discovered that exhaustion directly affected a person's turnover intentions. From the findings, Lee and Ashforth (1993b) provided two important implications. The first being that an employee's tenure should be considered as a moderator of burnout. The second implication that should be considered is that employees with high tenure may have developed effective coping strategies and that those who did not develop those strategies are no longer with the organization.

In an additional publication, Lee and Ashforth (1993a) examined potential antecedents and outcomes of burnout. The findings showed that emotional exhaustion is central to the process of burnout. In turn, they found that exhaustion was related to depersonalization as well as to helplessness, professional commitment, and turnover intentions. Age was one of the antecedents evaluated; however, it was not found to be associated with the variable of emotional exhaustion. Instead, it appeared to be related to personal accomplishment and professional commitment.

Lee and Ashforth (1996) published results on a meta-analysis they conducted to examine how demand, resource correlates, behavioral correlates, and attitudinal correlates related to the three dimensions of burnout. The meta-analysis examined 61 studies that utilized the MBI in their research. They stated that COR theory is a structure

for viewing how "correlates are related to burnout" (p. 123). Their findings show patterns of association that occurred between job demands and resource correlates with the three dimensions of burnout, and that these patterns seemed to be consistent with COR's explanation of burnout.

Demerouti et al. (2001) conducted a research study of employees at an insurance company using a Dutch version of the MBI General Survey (MBI-GS) combined with a Dutch version of the Job Content Questionnaire (Karasek, Brisson, Kawakami, Houtman, Bongers & Amick, 1998), and three other instruments. Based on findings from this study, the researchers believe that active jobs may lead to an increase in worker motivation and learning, as well as high levels of strain. They also linked this category to potential health impairments. Alternatively, the researchers believe that jobs that can be categorized as low-strain may result in less health impairment as well as provide the opportunity for active learning (Demerouti et al., 2001).

Bakker et al. (2002) conducted a research study that included employees from eight different occupations. One goal of this study was to examine the factorial validity of the MBI General Survey (MBI-GS). An additional goal was to examine characteristics such as age, gender, and working experience and the relationship with burnout. Similar to previous findings, the results showed that women scored higher on exhaustion. However, the MBI-GS uses cynicism (negative attitudes) as a factor instead of depersonalization, which is a standard factor in the original MBI as well as the MBI-ES. Prior research has shown that men typically score higher on depersonalization than women. Because depersonalization and cynicism are not precisely the same, the results of this study were different. Results of this particular research study showed that women

scored higher on cynicism. The results also indicated that the differences between men and women are more significant with younger employees and employees with limited work experience.

Schaufeli and Bakker (2004) researched four different Dutch service organizations from different service sectors. They utilized the MBI-GS (Dutch version) along with multiple other instruments which allowed them to evaluate burnout's relation to engagement, job demands, workload, emotional demands, job resources, performance feedback, social support from colleagues, supervisory coaching, health problems, and turnover intention. The research showed that there is a negative relationship between burnout and engagement, but they are not exact opposites. Job demands and a lack of job resources can predict job burnout; however, engagement is only predicted by job resources. They also found that health problems, as well as turnover intentions, are related to burnout, while engagement is only related to turnover intentions. The relationship between job demands and health problems can be mediated by burnout, while the relationship between job resources and turnover intention is mediated by engagement. If an organization attempts to engage an employee who has already started to burn out, the engagement may not be enough to offset the side-effects of burnout that the employee has already developed.

Summary

The literature shows that there has been some research related to how technology affects burnout in the users of the technology. However, there is limited, if any, research looking at how a person's current stage of burnout affects their acceptance of the technology. More significantly, there is extremely limited research on technology

acceptance when it comes to upgrades to a technology, let alone how a person's current state on the burnout scale affects the acceptance of that upgrade. The 2018 upgrade to version 'Daylight' of D2L Brightspace within the University System of Georgia will provide an excellent opportunity to look at both the faculty's level on the burnout scale as well as their acceptance of the technology upgrade.

Prior research in both technology acceptance and burnout has shown that demographic characteristics can be potential moderators of the variables in both models. For example, faculty tenure status, age, years of teaching experience, and LMS experience may all play a role in burnout as well as technology acceptance. There is significance for technology departments and technical trainers if this research shows that higher burnout correlate with lower technology acceptance. This will provide technology departments and trainers the grounds to begin enhanced training options. Training that can help the whole person so that the person can better accept and utilize the technology provided to them. Faculty who have a good grasp of the technology and can use it efficiently can be more effective. These improvements can mean higher quality of classes that give students better chances of success. This research will contribute to the knowledge base of efforts for improving student retention and graduation rates in higher education.

Chapter III

METHODOLOGY

The purpose of this chapter is to describe the methodology that was implemented in this study in order to answer the previously presented research questions. This chapter will first discuss the research design, describing the independent and dependent variables on which the study will focus. This will be followed by a discussion of the participants, covering the target population, the accessible population, the sampling procedure, and the expected sample that was in this study. Additionally, this section will cover the potential risks and ethical considerations related to this study. Discussion about the instrumentation will follow and will explain the instruments to be implemented, as well as the validity and reliability of those instruments. Information about the data collection will come next, covering the sources of the data that was used as well as the data management methods that were implemented. This will be followed by a discussion of the data analyses techniques that were employed, covering the descriptive statistics and statistical procedures for each question addressed, as well as the statistical considerations and assumptions for each of the statistical procedures used. Finally, this chapter will conclude with a summary of the methodology to be implemented.

Research Design

A cross-sectional correlational research design was used to examine how faculty's level of emotional exhaustion (EE), depersonalization (DP), personal accomplishment (PA), perceived usefulness (PU), perceived ease of use (PEOU), and the effects on

attitude towards (AT) using D2L Brightspace. This design was selected for multiple reasons. The sample selected for this study was not in a contained environment, so the study could not be experimental. The participants were too dispersed across the state, and there were too many policies to contend with across multiple institutions to conduct an intervention. So, while some prior TAM research has been conducted as quasi-experimental, it was not feasible in this particular case. This research study investigated the degree of relationships between multiple quantitative variables (Leedy & Ormrod, 2005; Patten, 2012). The design helped to determine if more research is warranted in this area of the TAM field, and in doing so, it added to the body of knowledge. The cross-sectional design lent itself to the utilization of surveys, allowing for gathering a significant amount of data in a relatively short period of time. It also enabled collection of multiple data points, and it was a design that indicated if there was a need for the development of future studies.

The research study was designed to use a modified version of TAM. The original version includes the variables of Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Towards (AT) using, and Actual Use (U). This study did not utilize the U variable due to the difficulty of obtaining system usage logs, and due to the high variability of the Cronbach alpha scores reported by previous TAM research for the U variable. Additionally, since D2L is a mandatory usage scenario, the best indicator of acceptance of technology, in this case, was the AT variable. *Figure 2* shows the model for this study with the MBI-ES variables of Emotional Exhaustion (EE), Depersonalization (DP), and Personal Accomplishment (PA) extending the modified version of TAM.

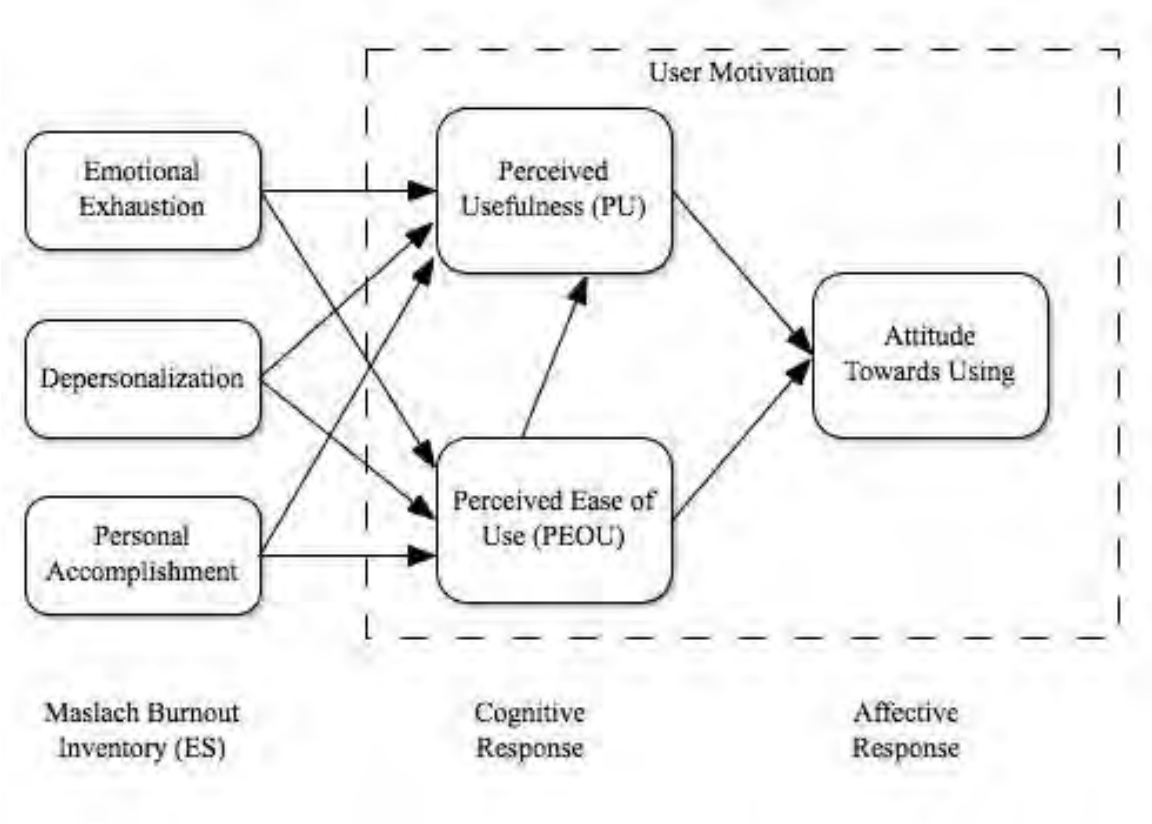

Figure 2. Modified TAM with MBI Variables

Independent Variables

As seen in *Figure 3*, there were multiple tiers in this study. For all three research questions in this study, the demographic questions were independent variables. These variables were tenure status and professional rank being measured on a nominal scale, and years using an LMS measured on an ordinal scale. Other variables measured in the demographic section of the survey were for descriptive purposes and include full-time versus part-time status, teaching experience (in years), number of LMSs worked with (prior LMS experience), and gender.

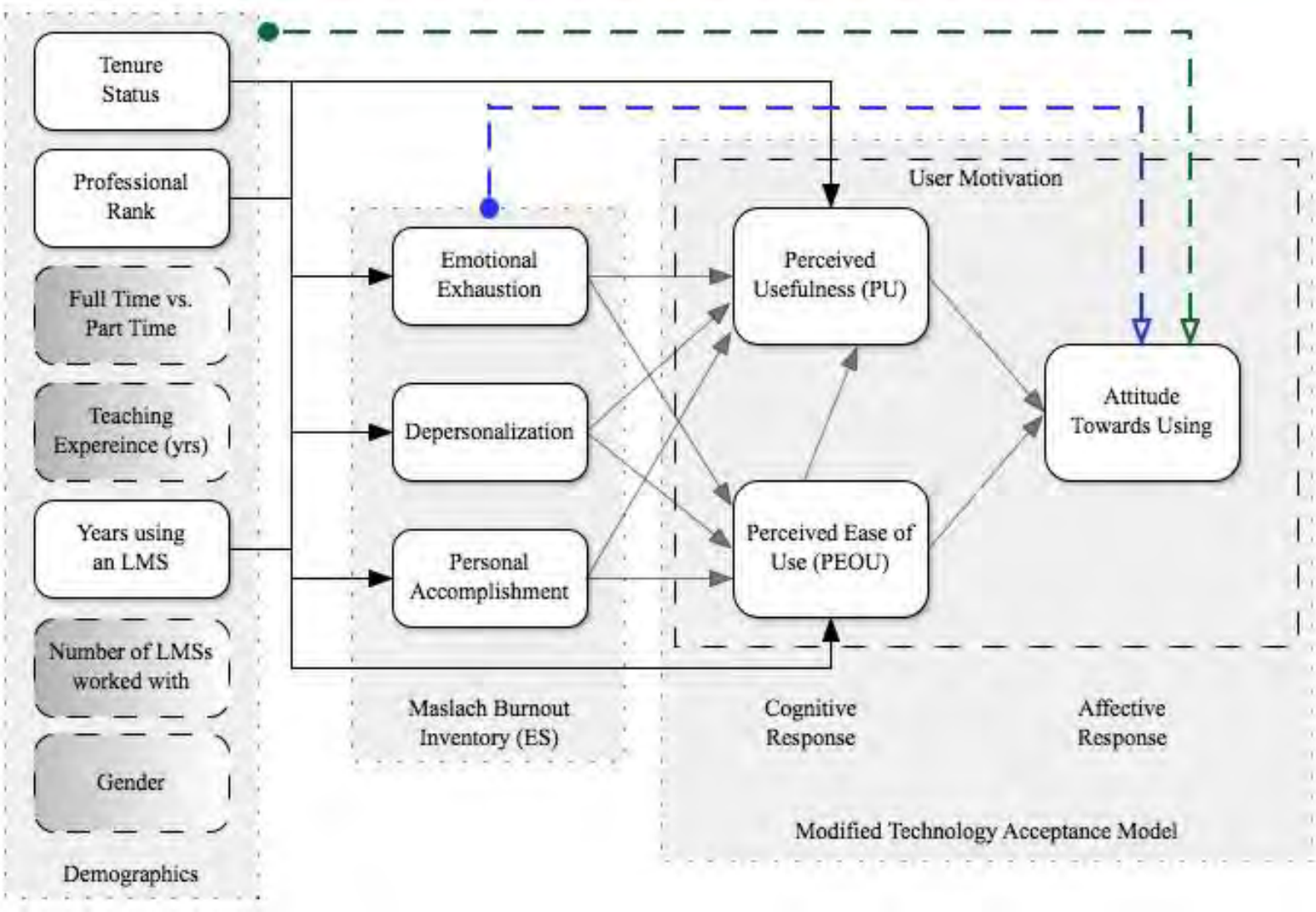

Figure 3. Modified TAM with MBI and Demographic Variables

The three subscales of the MBI-ES were used for all three research questions as exogenous independent variables and measured on an ordinal scale. The EE scale contains nine items, DP contains five, and PA contains eight, for a total of 22 items. These questions are measured on a 7-point scale that utilizes the anchors of 0 = Never, 1 = A few times a year or less, 2 = Once a month or less, 3 = A few times a month, 4 = Once a week, 5 = A few times a week, and 6 = Every Day.

The endogenous independent variables for the third research question were PU and PEOU from TAM. Each variable was measured with ten 7-point Likert scale questions and was therefore ordinal in nature. The anchors for measuring responses are 1 = Strongly Disagree, 2 = Disagree, 3 Somewhat Disagree, 4 = Neutral, 5 = Somewhat Agree, 6 = Agree, and 7 = Strongly Agree.

Dependent Variables

The dependent variable for the first research question in this study was PU. The dependent variable for the second research question in this study was PEOU. The dependent variable for the third research question in this study was Attitude Towards (AT) using technology. This variable was measured with five word-pairs on a 7-point semantic differential rating scale. These scales were measured at an ordinal scale level.

Participants

Target Population

The target population for this study was faculty members of higher educational institutions who work with technology on a regular basis in order to complete their daily instructional-related tasks.

Accessible Population

The accessible population for this study was faculty members who work for institutions within the University System of Georgia (USG). As of Fall 2017, there were 11,878 faculty members of various ranks employed with the USG (University System of Georgia, 2018c).

Sampling Procedure

The sampling procedure selected for this study was purposive sampling. This method is used by researchers when they believe specific persons or groups will provide the best insight into a particular problem or issue (Creswell, 2013; Leedy & Ormrod, 2005; Patten, 2012). For this research study, two institutions were selected for their particular institutional missions, while also being within close enough proximity to allow for the research to be conducted in a timely manner. For the first institution, purposive sampling allowed the selection of an institution in a category that has some of the broadest mission statements, and therefore, one of the most extensive selections of faculty with varied backgrounds and experiences, as compared with the other institutions' mission statements in the system. For the second institution, purposive sampling allowed for the selection of an institution within a category that has a unique role in providing education to underserved populations, providing access to unique perspectives of a diverse population of faculty.

The USG, at the time of this writing, was comprised of 26 institutions that were divided into four categories, which are Research Universities (4), Comprehensive Universities (4), State Universities (9), and State Colleges (9). These four categories provided four pre-defined groups for selecting the first institution in this study. The

group selected for the first institution for this study was the Comprehensive Universities category. According to the USG website, the core missions of institutions in this group include offering developmental studies programs, academic programs from the baccalaureate level to the doctoral level, and research in select areas (University System of Georgia, 2018d). These core missions showed that the four institutions included in this group provide a representation of all of the institutions in the USG. This may aid in the generalizability of the results to the other institutions in the USG and non-USG institutions with similar core missions.

Within the group of State Universities in the USG is the subgroup of Historically Black Colleges and Universities (HBCU). According to the Higher Education Act of 1965, an HBCU must have been established prior to 1964 with the primary mission of serving the African-American community (United States Office of Education., 2013). There are three HBCUs within the USG. The second institution for this study was selected from this group of institutions. The inclusion of this group allowed for a more culturally diverse representation (see Table 2) of faculty who are called to serve such institutions.

Anticipated Sample

The four institutions of the USG in the Comprehensive University group are Georgia Southern University, Kennesaw State University, University of West Georgia, and Valdosta State University. Of these four institutions, Valdosta State University was selected for this study. Valdosta State University had 407 faculty members of various ranks employed in Fall 2017. The three HBCUs of the USG are Albany State University, Fort Valley State University, and Savannah State University. Of these three institutions,

Albany State University was selected for this study. Albany State University had 200 faculty members of various ranks employed in Fall 2017. Table 1 shows a breakdown of the various ranks of faculty in all of the USG and the two selected institutions.

Table 1

Instructional Faculty by Rank–Fall 2017

Rank	USG #	ASU #	VSU #	USG %	ASU %	VSU %
Professor	2,938	36	127	24.73%	18.00%	31.20%
Associate Prof.	3,382	66	120	28.47%	33.00%	29.48%
Assistant Prof.	3,522	74	92	29.65%	37.00%	22.60%
Instructor	577	23	27	04.86%	11.50%	06.63%
Lecturer	1,459	1	41	12.28%	00.50%	10.07%
Total	11,878	200	407			

(University System of Georgia, 2018c)

The data from the USG website stated that in the Fall of 2017, the faculty gender distribution at the system was 53.8% male and 46.2% female, the distribution at Albany State University was 49.5% male and 50.5% female, and the distribution at Valdosta State University was 51.6% male and 48.4% female (University System of Georgia, 2018a). Distribution of faculty race/ethnic origin for both USG, Albany State University, and Valdosta State University can be viewed in Table 2.

This study obtained information from the participants via an online survey. No identifiable information was collected from the participants. The institutions being surveyed were Albany State University and Valdosta State University. The survey allowed the participants to opt out for any reason. The risks of the study were psychological, however, any threat the survey may pose to the psyche was mitigated by the participant's ability to opt out at any time, and no questions were mandatory.

Table 2

Institutional Faculty by Race/Ethnic Origin–Fall 2017

Race/Ethnic Origin	USG %	ASU %	VSU%
American Indian / Alaskan	00.2%	01.5%	00.7%
Asian	12.5%	12.0%	08.6%
Black	09.6%	40.0%	06.4%
Hispanic	03.1%	02.0%	03.2%
Multi-Racial	00.6%	00.5%	00.2%
Native Hawaiian or Other Pacific Islander	00.1%	00.0%	00.0%
White	71.7%	43.5%	80.7%
Unknown	02.3%	00.5%	00.2%

(University System of Georgia, 2018b)

Potential Risks and Ethical Considerations

There was no risk of criminal or civil liability with this survey. There was no means of employers tracing individual responses back to specific participants. The system used for the survey removed the computer's internet protocol (IP) address and location data for all survey responses, as well as disconnect the responses from any associated contact information (for surveys that are emailed through the survey system directly to potential participants).

Informed consent was obtained through the survey instrument. The consent information was contained in the survey instructions. The participant proceeding to the survey questions was considered acknowledgement of consent by the participant.

Instrumentation

The instrument for this research was a survey instrument comprised of an introductory letter, the consent statement, the modified Technology Acceptance Model (TAM) survey instrument, the Maslach Burnout Inventory–Educators Survey (MBI-ES) instrument, and a demographics section. The demographics section allowed the

researcher to compare survey results with the previous TAM and MBI literature to see if the results were consistent with the historical data or if the results are divergent. This information also helped to answer if the research model is equivalent across the demographic variables. The demographic survey questions are available in Appendix A.

Demographic information was recorded in the survey via the 13-item section of the survey (see Appendix A). The very first question of the online version of the survey asked for which institution they primarily work. The response from this question automatically customized the remaining technology related questions to that institution's branding for D2L Brightspace (e.g., Valdosta State University brands D2L as BlazeVIEW). This helped to eliminate any confusion as to what D2L Brightspace may be. Due to the necessity of an answer to this first question, and the requirement to make all survey questions voluntary, a "Decline to Answer" option was made available. This response provided the participant with an unbranded version of the survey.

Next, the participants were provided with the USG definitions for courses that are *fully at a distance*, *partially at a distance*, *hybrid*, and *technology enhanced*. This was followed by a simple matrix that asked the participants if they had ever taught courses that met those definitions and to respond Yes or No to each type. The purpose of the placement of this question near the beginning of the online version of the survey was as a means of checking to be sure the participants were reading and paying attention. It was assumed that the participant who answered "No" to all four categories of courses was not paying attention, and those participants were automatically sent to the end of the survey. This helped prevent skewing of the data, as well as prevented the waste of a licensed

version of the MBI-ES survey. The remaining demographic questions were placed at the end of the online version of the survey.

Technology Acceptance Model

The modified Technology Acceptance Model survey instrument was adapted to address D2L Brightspace as the technology of focus in this study. The questions in the general format are available in Appendix B. Technology acceptance was measured by the 25-item technology acceptance model instrument. Perceived Usefulness (PU) will consisted of 10 items that are measured on a 7-point Likert scale where a response of 1 equals "strongly disagree," and a response of 7 equals "strongly agree." Perceived Ease of Use (PEOU) also consisted of 10 items that were measured on a 7-point Likert scale which will follow the same format as the scale for PU. Attitude towards using (AT) consisted of five 7-point semantic differential rating scales, which were modeled based on items used in Davis' (1986) dissertation. The items were in response to the statement "All things considered, my using D2L Brightspace is . . ." The survey participants responded to five adjective pairs on the 7-point semantic differential scale.

Validity of TAM. Since TAM's development in the mid-80's, research has repeatedly shown the model to be valid and reliable. In his dissertation, Davis (1986) used the multitrait-multimethod technique which established both convergent and discriminant validity. He found convergent validity to be high on perceived usefulness, perceived ease of use, and attitude towards using. Discriminant validity was also high after elimination of items that were negatively worded for perceived ease of use. These findings were reinforced in later research, where both forms of validity were found to be significant (Davis, 1989; Davis, 1993). Information on factorial validity was also

included in his 1989 publication, where the results showed evidence of two distinct factors, supporting perceived usefulness and perceived ease of use. Other researchers have found strong support for the validity of TAM throughout the decades since the original dissertation (Amoako-Gyampah & Salam, 2004; Chau & Hu, 2002; Chau, 1996; Hu et al., 1999; Hu et al., 2003; Lee et al., 2013; Malhotra & Galletta, 1999, January; Ong & Lai, 2006; Teo et al., 2009), many of which have investigated extended and modified versions of the model.

Reliability of TAM. Most of the parameters of TAM have demonstrated good reliability. Davis (1986) found that a minimum of 0.80 for Cronbach's alpha was met or exceeded for the constructs of attitude toward using, perceived usefulness, and perceived ease of use. Davis (1989) published results from two studies where the pooled alphas for perceived usefulness and perceived ease of use were 0.97 and 0.91 respectively. Table 3 provides a sample of reported Cronbach's alpha results that have been published in the TAM literature over the years further confirming TAMs reliability.

Maslach Burnout Inventory

This study utilized the Maslach Burnout Inventory–Educators Survey (MBI-ES), which includes 22 items and is adapted for use with educators from the original MBI (Maslach, Jackson, Leiter, et al., 2016), to evaluate the burnout component. Due to the proprietary nature of the MBI-ES, the documentation letter of permission to utilize the MBI-ES instrument is available in Appendix C, and the three sample questions of the MBI-ES from the third edition of the Maslach Burnout Inventory Manual™ are in Appendix D (Maslach, Jackson, & Leiter, 1996). The Maslach Burnout Inventory–Educators Survey (MBI-ES) consists of three subscales. The three subscales are

Emotional Exhaustion (EE–9 items), Depersonalization (DP–5 items), and Personal Accomplishment (PA–8 items). Survey participants answered the statements in this instrument with how frequently they experience the feelings described. The answers were on a seven-point Likert scale ranging from 0 ("Never") to 6 ("Every day"). Method 1, as described by Maslach, Jackson, and Leiter (2016), were used to score the results from the MBI-ES. This method allows for the results to be easily compared with other published results of MBI-ES research. This particular method requires adding the items for each scale, and the resulting sum becomes the scale score (p. 35). Higher scores on the emotional exhaustion and depersonalization scales indicate a higher degree of burnout, whereas a lower score on personal accomplishment will indicate a higher degree of burnout.

Validity of MBI-ES. Convergent validity in the original MBI has been demonstrated through multiple methods, including correlation with observation of burnout by others also referred to as an independent assessment (Jackson & Maslach, 1982; Maslach & Jackson, 1979), job conditions (Lee & Ashforth, 1996), desire to leave one's job or turnover intention (Alarcon, 2011; Jourdain & Chênevert, 2010; Maslach & Jackson, 1984), and psychological health complaints (Jourdain & Chênevert, 2010; Kim, Ji, & Kao, 2011). According to Schaufeli and Enzmann (1998), many studies have established the discriminant validity of the MBI through demonstrating that burnout is a distinct construct. Multiple researchers have evaluated the MBI constructs to see if and how they may be related to other constructs, such as job satisfaction, but have found very little correlation (Jackson, Turner, & Brief, 1985; Leiter, 1985; Riggar, Godley, & Hafer, 1984; Zedeck, Maslach, Mosier, & Skitka, 1988).

Table 3

Sampling of TAM research reported Cronbach's alpha

Year	Author	PU	PEOU	AT
1986	Davis, Fred D., Jr.	0.97	0.91	0.96
1989	Davis, Fred D., Jr.	0.98	0.94	--
1996	Chau, P.Y.K.	-- --	0.93 0.94	-- --
1999	Malhotra, Y., & Galletta, D. F.	0.960	0.961	0.899
1999	Hu, P. J., Chau, P. Y. K., Sheng, O. R. L., & Tam, K. Y.	0.890	0.790	0.690
2002	Chau, P. Y., & Hu, P. J.	0.860	0.770	0.690
2003	Hu, P. J.-H., Clark, T. H., & Ma, W. W.	0.77 (pre) 0.77 (post)	0.82 (pre) 0.83 (post)	-- --
2004	Amoako-Gyampah, K., & Salam, A. F.	0.670	0.760	--
2006	Ong, C.-S., & Lai, J.-Y.	1 = 0.83 2 = 0.88 3 = 0.84 4 = 0.70	1 = 0.67 2 = 0.82 3 = 0.83 4 = 0.75	--
2009	Teo, T., Lee, C. B., Chai, C. S., & Wong, S. L.	0.950	0.920	0.950
2013	Lee, Y.-H., Hsieh, Y.-C., & Chen, Y.-H.	0.862	0.821	0.615

-- Not Reported

As with the original MBI, there exists evidence in the MBI-ES research to support the association of burnout with job conditions. These include areas such as general working conditions (Byrne, 1994; Koustelios & Tsigilis, 2005), as well as student behavioral issues (Astrauskaitė, Perminas, & Kern, 2010; Chang, 2013; Fernet, Guay, Senécal, & Austin, 2012; Lambert, McCarthy, O'Donnell, & Wang, 2009b). Other studies have evaluated the correlation of burnout scores to predicted outcomes, such as the research of Hoglund, Klingle, and Hosan (2015), whose findings showcased how

burnout in teachers can affect the students' learning experiences, demonstrating longer-term outcomes that are related to burnout.

Reliability of MBI-ES. Wheeler, Vassar, Worley, and Barnes (2011) conducted a meta-analysis of studies using the MBI, evaluating 84 studies where the alpha coefficients were reported. The results of this analysis showed that 98% of the studies reviewed reported at or above 0.80 for the EE subscale. The other two subscales, DP and PA, results were lower and less consistent than EE; however, the authors attributed much of the variance to factors such as the studies being conducted in foreign languages and the professions being studied. Despite these variances, the alpha estimates for each of the subscales typically fell inside the 0.70 to 0.80 range.

The manual for the MBI states that the instrument uses a stable, three-factor structure which was established in the development of the instrument using principal component analyses (Maslach et al., 2016). This structure has been verified by multiple researchers over the years through additional principal component analysis (Golembiewski, Munzenrider, & Carter, 1983; Jackson et al., 1985; King & Beehr, 1983), and confirmatory factor analysis (Lee & Ashforth, 1993b). Some studies have found cross-loading on some items (Byrne, 1993; Leiter & Durup, 1996; Schaufeli & Van Dierendonck, 1993); hence it has been encouraged that researchers check the factor structure in their samples and to report scale means for all items.

Data Collection

Once the Valdosta State University Institutional Review Board (IRB) granted permission (see Appendix H), a panel of selected experts, in conjunction with the

research methodologist reviewed the instrument set. Any modifications recommended by the panel were incorporated into the instrument as necessary.

The survey instrument was developed in Qualtrics®, an online survey tool provided by Valdosta State University. In order to ensure that all responses in the surveys were anonymous, the survey enabled a Qualtrics® feature located under Survey Settings: Survey Termination which is referenced as "Anonymizing Responses." Enabling this feature ensured that all personal identifying information was scrubbed from the saved data. For individual links emailed through the Qualtrics® system, this included removing the IP address and location data, as well as disconnecting the data from the contact information. So, while there was a record that a person responded to the survey, it is impossible to link individual results back to specific participants.

Once the instrument was finalized, the study was ready to be conducted at the two selected universities (Albany State University and Valdosta State University). Approval by the Provost and IRB at Albany State University was obtained before conducting the study at that institution (see Appendices G and I). The method of distribution of the survey was dependent upon the host institution and its associated policies regarding surveying of employees. The two possible methods that were identified were that the research sponsor at the institution will email out the survey to the faculty of that institution, or the researcher would be given a list of faculty emails that would be placed into Qualtrics® from which the survey would be disseminated. Both methods included an introductory email that would be sent to the prospective respondents. The email would explain the purpose of the research and include a link to the survey. In this

instance, the host institution provided the research with a list of faculty emails that were placed into Qualtrics®.

Once the host institution had granted approval, the survey emails were sent to that institution's faculty members. The initial page of the survey introduced the survey participant to the study and acknowledged consent by proceeding with the survey. There was an initial thirteen-day response time for faculty to participate, which happened to occur over the American national holiday of Thanksgiving, where faculty would have had three consecutive days off from work. At the end of this window, a reminder was sent out allowing for an additional six days to respond. At this point the number of completed surveys was lower than required, an additional week was be provided to allow faculty more time to respond. The third reminder was sent with two additional days, and then a final reminder with five additional days. This provided faculty with approximately four calendar weeks to participate in the survey. At this point, the survey was closed to additional entries. Following this, the researcher began analyzing the data gathered.

Data Management

Confidentiality of participants was ensured through multiple means. The survey itself was voluntary, and no questions in the survey were mandatory. Additionally, no participant information was obtained. Multiple Qualtrics® options were enabled to protect the survey and the participants, including but not limited to: *Prevent Ballot Box Stuffing*, to help prevent skewing of data; *Prevent Indexing*, to prevent search engines from locating the survey and thereby protecting the MBI-ES licenses from being wasted; *Survey Expiration*, to automate the closing of the survey at the end of the collection period; and *Anonymize Response*, to scrub any identifying information from the

participants response, removing contact association as well as IP address. All participants, including any who selected "Decline" on the letter of consent section of the instrument, were taken to a "Thank you" page.

The integrity of the data was ensured by recording and storing the data in the Qualtrics® system. Since the survey was only provided as an online survey, there was no manual entry of data, which eliminated the issue of entry error on the part of the researcher. Per Federal IRB regulations and University System of Georgia policy, the data must be retained for a minimum of three (3) years after the completion of the final report (U.S. Department of Health & Human Services, 2011; USG Records Management and Archives, 2018). In order to ensure this availability after the survey has been closed, the researcher exported the raw data and stored the export on an encrypted USB jump drive. The drive will be retained at an offsite location in a fireproof safe to which the researcher has access.

Data Analysis Plan

Survey data was transcribed and entered into SPSS version 24.0 for Windows. The demographics and variables of interest were explored using descriptive statistics. Descriptive statistics consisted of frequencies, percentages, means, and standard deviations. Bar charts were used to examine the descriptive trends visually.

Pre-Analysis Data Screen

Data was screened for completion. Large portions of missing data were removed from further analyses. Standardized values, or *z*-scores, were created for the variables of interest. Standardized values falling outside of the range $z = \pm 3.29$ standard deviations

away from the mean were identified as outliers, and were removed from inferential analysis (Tabachnick & Fidell, 2007).

Reliability

Cronbach's alpha test of reliability was used to explore the internal consistency of the MBI and the TAM. The Cronbach's alpha provided the mean correlation coefficients between each pair of survey items and the total number of items comprising each scale (Brace, Kemp, & Snelgar, 2012). The coefficients were interpreted using the guidelines suggested by George and Mallery (2016) where a > .9 Excellent, > .8 Good, > .7 Acceptable, > .6 Questionable, > .5 Poor, and $\leq$ .5 Unacceptable.

Research Questions

Research Question One. To what extent are emotional exhaustion, depersonalization, and personal accomplishment significant predictors of perceived usefulness, while controlling for tenure status, professional rank, and years using an LMS?

$H_0$1: Emotional exhaustion, depersonalization, and personal accomplishment are not significant predictors of perceived usefulness, while controlling for tenure status, professional rank, and years using an LMS.

H_a1: Emotional exhaustion, depersonalization, and personal accomplishment are significant predictors of perceived usefulness, while controlling for tenure status, professional rank, and years using an LMS.

Research Question Two. To what extent are emotional exhaustion, depersonalization, and personal accomplishment significant predictors of perceived ease of use, while controlling for tenure status, professional rank, and years using an LMS?

$H_0$2: Emotional exhaustion, depersonalization, and personal accomplishment are not significant predictors of perceived ease of use, while controlling for tenure status, professional rank, and years using an LMS.

H_a2: Emotional exhaustion, depersonalization, and personal accomplishment are significant predictors of perceived ease of use, while controlling for tenure status, professional rank, and years using an LMS.

Research Question Three. To what extent are perceived usefulness and perceived ease of use significant predictors of attitudes toward using technology, while controlling for tenure status, professional rank, years using an LMS, emotional exhaustion, depersonalization, and personal accomplishment?

$H_0$3: Perceived usefulness and perceived ease of use are not significant predictors of attitudes towards using technology, while controlling for tenure status, professional rank, years using an LMS, emotional exhaustion, depersonalization, and personal accomplishment.

H_a3: Perceived usefulness and perceived ease of use are significant predictors of attitudes towards using technology, while controlling for tenure status, professional rank, years using an LMS, emotional exhaustion, depersonalization, and personal accomplishment.

In order to address the research questions, a series of hierarchical linear regressions were conducted to explore the predictive effect of demographics, burnout, and cognitive responses on attitudes toward using technology. A hierarchical linear regression is an appropriate statistical analysis when assessing the predictive relationship

between a series of independent variables and a continuous outcome, while controlling for the effect of additional factors (Tabachnick & Fidell, 2007).

Prior to analysis, the assumptions of a linear regression were tested–normality, homoscedasticity, and absence of multicollinearity. Normality was verified through visual assessment of a P-P scatter plot. Homoscedasticity was tested by visual inspection of a scatterplot between the predicted values and the residuals. Absence of multicollinearity was tested with variance Inflation Factors (VIF). VIF values larger than 10 indicate high collinearity between the predictor variables, and the assumption would be violated (Stevens, 2009).

For research question one, the analysis was conducted in two steps. The demographic variables–tenure status, professional rank, and years using an LMS–were entered into the first step of the model. The MBI subscales–emotional exhaustion, depersonalization, and personal accomplishment–were entered into the second step. The criterion variable corresponded to perceived usefulness, as measured by the TAM.

For research question two, the analysis was also conducted in two steps. The demographic variables–tenure status, professional rank, and years using an LMS–were entered into the first step of the model. The MBI subscales–emotional exhaustion, depersonalization, and personal accomplishment–were entered into the second step. The criterion variable corresponded to perceived ease of use, as measured by the TAM.

For research question three, the analysis was conducted in three steps. The demographic variables–tenure status, professional rank, and years using an LMS–were entered into the first step of the model. The MBI subscales–emotional exhaustion, depersonalization, and personal accomplishment–were entered into the second step. The

two TAM variables in the previous research questions were entered as predictors into the third step of the regression model. The criterion variable for this analysis corresponded to attitudes toward using technology, as measured by the TAM.

Using the hierarchical input of predictors, the coefficient of determination, R^2, was compared between the steps to assess how much additional variance could be explained by the inclusion of the predictor variables. The *F* test was used to make the overall determination of whether a significant relationship exists between the variables of interest. Individual *t*-tests were used to evaluate the predictive effect of each independent variable.

Sample Size Justification

To conduct the inferential analyses proposed for the research, it was necessary to sample from an adequate pool of participants. G*Power 3.1.7 was used to calculate the minimum sample size requirement (Faul, Erdfelder, Buchner, & Lang, 2014). The hierarchical linear regression was used as the primary inferential analysis. Research question three had the most predictor variables. Using a medium effect size ($f^2 = .15$), a power of .80, a generally accepted alpha level ($\alpha = .05$), and eight predictor variables, it was determined that a total of 109 participants would be sufficient for the data collection.

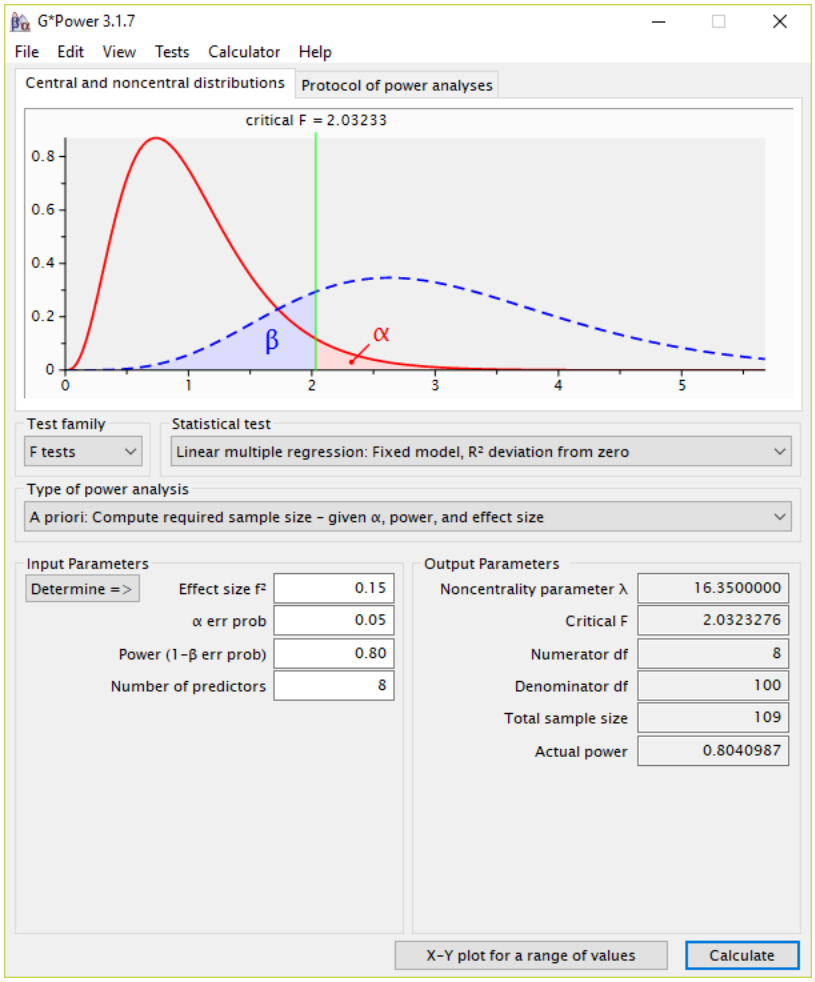

*Figure 4. G*Power 3.1.7 calculation of minimum sample size requirement.*

Summary

The research methodology planned for this study was covered in this chapter, reviewing the research design and procedures to be implemented. The independent variables for all research questions were the demographic questions and the MBI-ES variables, with perceived usefulness (PU) and perceived ease of use (PEOU) being independent variables for the third research question. The dependent variable for the first research question was PU, the second research question was PEOU, and the third research question was attitude towards technology (AT). Higher education faculty were the target population for this research, with a focus on the University System of Georgia,

and the plan for sampling was discussed. The instrument utilized included the use of the MBI-ES in conjunction with a modified version of the TAM. Permission to proceed with the research study was first obtained from the Valdosta State University Institutional Review Board (see Appendix H). Prior to surveying the faculty at Albany State University, permission was requested from Albany State's Provost and IRB (see Appendices G and I). Once approval was received, faculty at that institution was sent a Qualtrics® survey link. The initial page of the survey contained the consent statement. Data was analyzed using SPSS to provide descriptive statistics, as well as conduct hierarchical linear regressions in order to answer the research questions.

Chapter IV

RESULTS

The purpose of this study was to discover whether or to what degree job-related burnout affects attitudes toward online learning technology by faculty. This chapter presents the findings of the data analysis. Descriptive statistics were used to explore the trends of the variables. Hierarchical linear regressions were used to address the research questions. Statistical significance was noted at the generally accepted level, $\alpha = .05$.

Pre-Analysis Data Screen

A total of 140 participants responded to the survey questionnaire for a 16% response rate. Survey responses were examined for incomplete responses and outlying scores. Eight participants did not respond to the Technology Acceptance Model (TAM) questionnaire. Six participants did not provide responses for perceived usefulness. Four participants did not provide responses for perceived ease of use. One participant did not respond to any portion of the MBI-ES. Outliers were then examined through calculation of standardized values, or *z*-scores. One participant was removed due to having low outlying scores for attitudes toward technology. The final sample size consisted of 120 total participants.

Demographics of Sample

The distribution of participants was split between 48 males (40.0%) and 70 females (58.3%). Most participants were employed full-time ($n = 93$, 77.5%). A majority of participants were professors/associate professors ($n = 50$, 41.7%). Tenure status was

distributed between non-tenure track (*n* = 50, 41.7%), tenure-track (*n* = 23, 19.2%), and tenured (*n* = 44, 36.7%). Table 4 presents frequencies and percentages for the demographical data (with institutions).

Table 4

Frequencies and Percentages of Demographical Data

Demographic	*n*	%	ASU		VSU	
			n	%	*n*	%
Gender						
Male	48	40.0	18	34.6	30	45.5
Female	70	58.3	34	65.4	36	54.5
No response	2	01.7	--	--	--	--
Employment status						
Full-time	93	77.5	44	83.0	49	74.2
Part-time	26	21.7	9	17.0	17	25.8
No response	1	00.8	--	--	--	--
Professional rank						
Lecturer/instructor	20	16.7	6	11.5	14	20.9
Adjunct	25	20.8	12	23.1	13	19.4
Assistant professor	24	20.0	15	28.8	9	13.4
Professor/associate professor	50	41.7	19	36.5	31	46.3
No response	1	00.8	--	--	--	--
Tenure status						
Non-tenure track	50	41.7	18	36.0	32	47.8
Tenure-track	23	19.2	15	30.0	8	11.9
Tenured	44	36.7	17	34.0	27	40.3
No response	3	02.5	--	--	--	--

Note. Due to rounding error, not all percentages may sum to 100.

Descriptive Statistics of Continuous Variables

Cronbach's alpha tests of internal consistency were conducted on subscales. The alpha values were interpreted using the guidelines suggested by George and Mallery (2016) where $\alpha > .9$ Excellent, $\alpha > .8$ Good, $\alpha > .7$ Acceptable, $\alpha > .6$ Questionable, $\alpha > .5$ Poor, $\alpha < .5$ Unacceptable. Results for all the scales met the acceptable threshold. Table 5 presents the descriptive statistics for the variables of interest. A noteworthy finding was the minimum and maximum for the responses to the number of courses taught per year with LMS; however, the mean value appears normal.

Table 5

Descriptive Statistics of Continuous Variables

Composite Scores	*Min.*	*Max.*	*M*	*SD*	*α*
Number of years teaching higher education	1.00	48.00	15.07	8.42	-
Number of years teaching or supplementing courses with LMS in higher education	0.00	23.00	10.09	5.08	-
Number of courses taught per year with LMS	0.00	100.00	9.12	10.33	-
Perceived usefulness	0.00	60.00	42.03	14.19	.97
Perceived ease of use	6.00	59.00	36.80	10.11	.82
Attitude toward technology	-6.00	15.00	10.17	5.35	.90
Emotional exhaustion	0.00	46.00	17.20	12.74	.94
Depersonalization	0.00	21.00	5.34	4.89	.71
Personal accomplishment	16.00	48.00	37.28	7.03	.73

Research Question One

To what extent are emotional exhaustion, depersonalization, and personal accomplishment significant predictors of perceived usefulness, while controlling for tenure status, professional rank, and years using an LMS?

$H_0$1: Emotional exhaustion, depersonalization, and personal accomplishment are not significant predictors of perceived usefulness, while controlling for tenure status, professional rank, and years using an LMS.

H_a1: Emotional exhaustion, depersonalization, and personal accomplishment are significant predictors of perceived usefulness, while controlling for tenure status, professional rank, and years using an LMS.

To address research question one, a hierarchical linear regression was conducted. Tenure status, professional rank, and years using an LMS were treated as control variables. Due to tenure status and professional rank being categorical variables, the reference groups were non-tenure track and adjunct–respectively. Emotional exhaustion, depersonalization, and personal accomplishment were inputted as predictor variables. The criterion variable corresponded to perceived usefulness.

Prior to conducting the analysis, the assumptions for a multiple linear regression were checked–normality of residuals, homoscedasticity, and absence of multicollinearity. A normal P-P plot was used to assess normality of residuals. There was little to no deviation in the data compared to the normality trend line, thus the assumption of normality was met (see Figure 5). Homoscedasticity was interpreted through the scatterplot between the standardized predicted values versus the standardized residual values. The presence of no recognizable pattern indicated homoscedasticity was present (see Figure 6). The absence of multicollinearity assumes that predictor variables are not too related and were assessed using Variance Inflation Factors (VIFs). VIF values over 10 will suggest the presence of multicollinearity (Stevens, 2009). None of the predictor variables showed any signs of multicollinearity, thus the assumption was met.

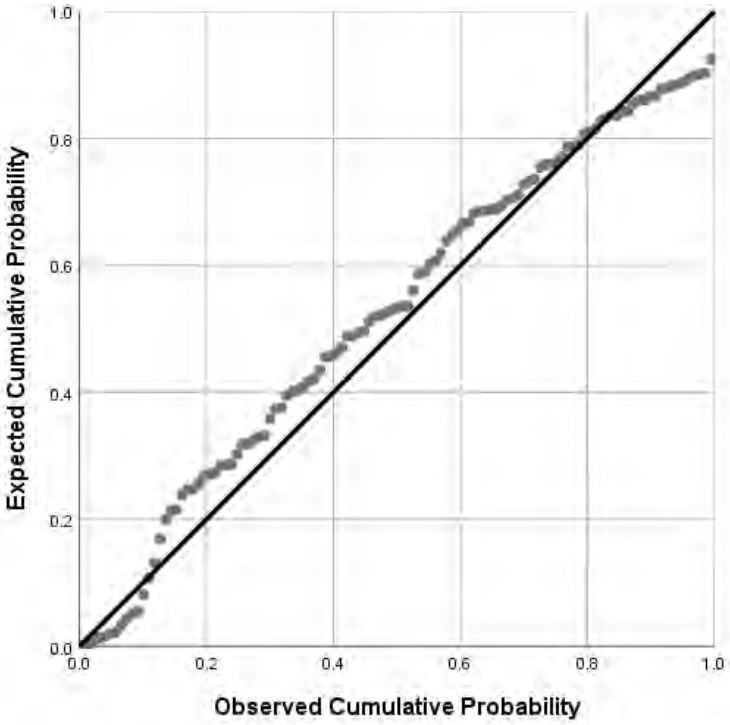

Figure 5. Normal P-P plot for perceived use.

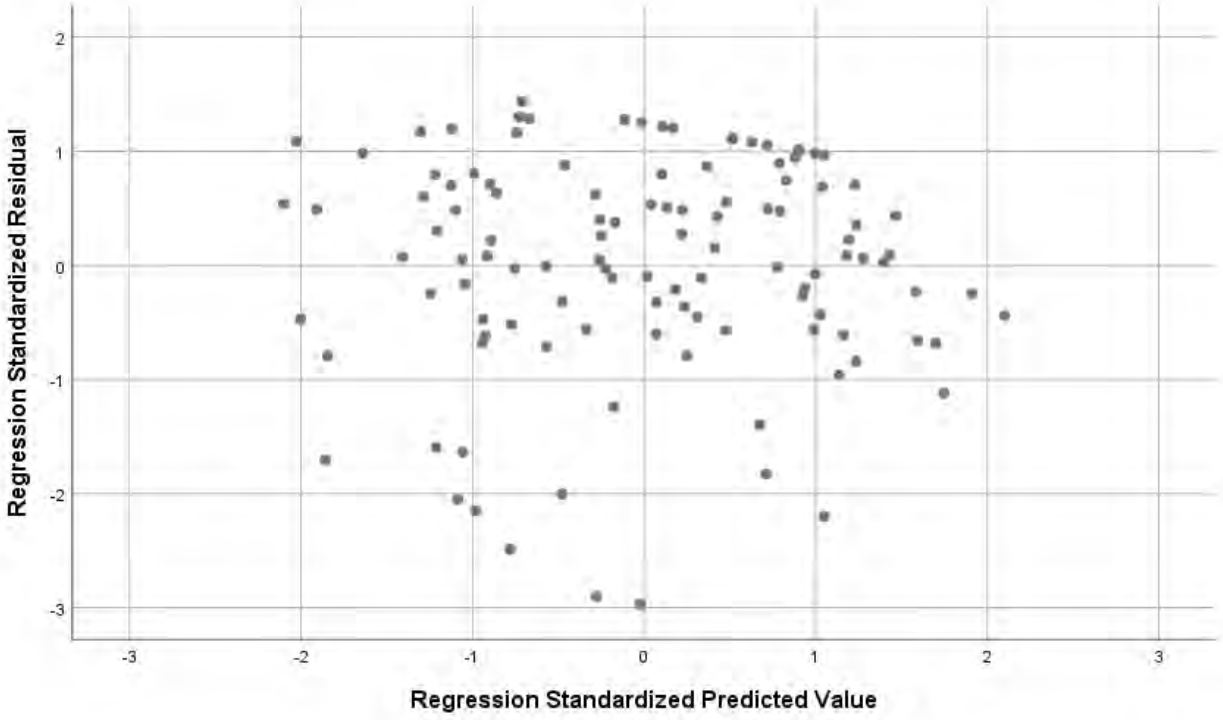

Figure 6. Homoscedasticity plot for perceived use.

The regression was conducted in two blocks, with the goal of determining the effect of covariates prior to assessing the contribution of emotional exhaustion, depersonalization, and personal accomplishment to the model's predictive ability on perceived use. The first block of the regression with the control variables provided a non-significant predictive model toward perceived use, $F(6, 108) = 1.31$, $p = .260$, $R^2 = .068$. The second block of the regression with the inclusion of emotional exhaustion, depersonalization, and personal accomplishment was also not statistically significant to perceived use, $F(9, 105) = 0.90$, $p = .526$, $R^2 = .072$. The coefficient of determination only increased by about 0.4% between the two steps, suggesting that the predictor variables added very little to the overall variance of perceived use. Due to non-significance of the regression model, the null hypothesis was not rejected for Research Question One (RQ1). Table 6 presents the findings of the hierarchical regression for RQ1.

Table 6

Results for Hierarchical Linear Regression with Emotional Exhaustion, Depersonalization, and Personal Accomplishment Predicting Perceived Use, While Controlling for Tenure, Professional Rank, and Years Using an LMS

Predictor	*B*	SE	β	*t*	*p*
Step 1					
Tenure status (reference: non-tenure track)					
Tenure-track	0.96	4.98	.03	0.19	.848
Tenured	-3.03	5.08	-.10	-0.60	.553
Professional rank (reference: Adjunct)					
Lecturer/instructor	3.08	4.33	.08	0.71	.478
Assistance professor	1.96	5.31	.06	0.37	.713
Professor/associate professor	0.04	5.50	.00	0.01	.994
Years using an LMS	-0.43	0.29	-.15	-1.50	.137
Step 2					
Tenure status (reference: non-tenure track)					
Tenure-track	0.91	5.20	.03	-0.18	.862
Tenured	-2.85	5.28	-.10	-0.54	.590
Professional rank (reference: Adjunct)					
Lecturer/instructor	3.19	4.45	.08	0.72	.475
Assistance professor	2.54	5.47	.07	0.47	.643
Professor/associate professor	0.16	5.58	.01	0.03	.977
Years using an LMS	-0.43	0.30	-.15	-1.45	.150
Emotional exhaustion	0.03	0.16	-.02	-0.17	.868
Depersonalization	0.15	0.41	.05	0.36	.717
Personal accomplishment	0.14	0.21	.07	0.65	.518

Note. Step 1) $F(6, 108) = 1.31$, $p = .260$, $R^2 = .068$, Step 2) $F(9, 105) = 0.90$, $p = .526$, $R^2 = .072$

Research Question Two

To what extent are emotional exhaustion, depersonalization, and personal accomplishment significant predictors of perceived ease of use, while controlling for tenure status, professional rank, and years using an LMS?

$H_0$2: Emotional exhaustion, depersonalization, and personal accomplishment are not significant predictors of perceived ease of use, while controlling for tenure status, professional rank, and years using an LMS.

H_a2: Emotional exhaustion, depersonalization, and personal accomplishment are significant predictors of perceived ease of use, while controlling for tenure status, professional rank, and years using an LMS.

To address research question two, a hierarchical linear regression was conducted. Tenure status, professional rank, and years using an LMS were treated as control variables. Emotional exhaustion, depersonalization, and personal accomplishment were inputted as predictor variables. The criterion variable corresponded to perceived ease of use.

Prior to conducting the analysis, the assumptions for a multiple linear regression were checked again. In the normal P-P plot, there was little to no deviation in the data compared to the normality trend line, thus the assumption of normality was met (see Figure 7). For homoscedasticity, there was little to no recognizable pattern in the scatterplot. Thus, the assumption of homoscedasticity was met (see Figure 8). None of the predictor variables had VIF values above 10. Therefore, there was no presence of multicollinearity and the assumption was met.

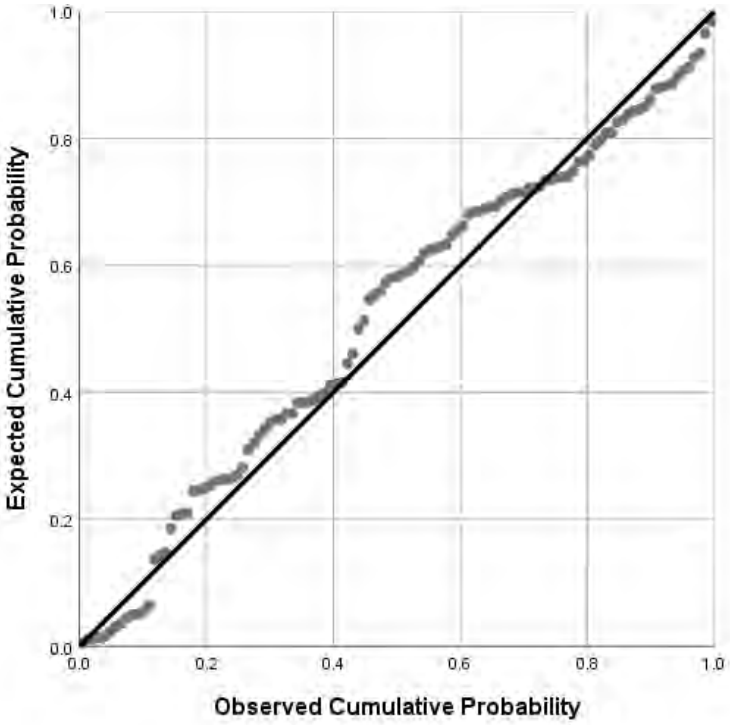

Figure 7. Normal P-P plot for perceived ease of use.

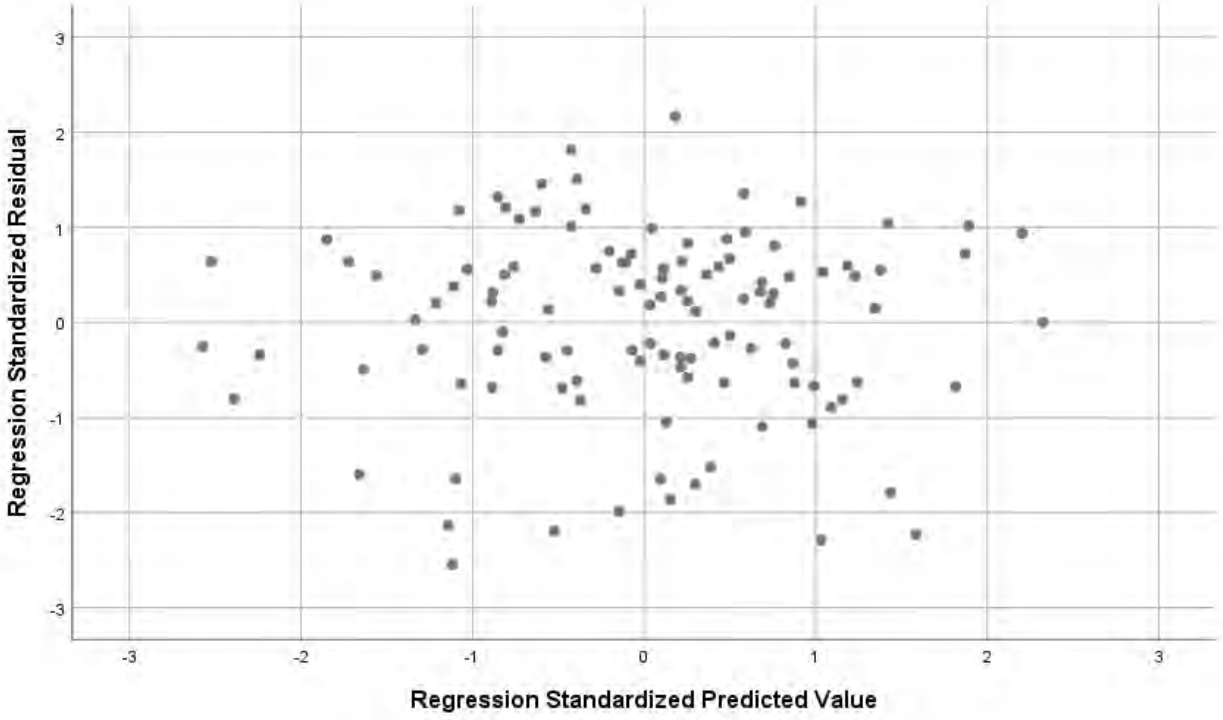

Figure 8. Homoscedasticity plot for perceived ease of use.

The regression was conducted in two blocks, with the goal of determining the effect of covariates prior to assessing the contribution of emotional exhaustion, depersonalization, and personal accomplishment to the model's predictive ability on perceived ease of use. The first block of the regression with the control variables provided a non-significant predictive model toward perceived ease of use, $F(6, 108) = 0.65$, $p = .694$, $R^2 = .035$. The second block of the regression with the inclusion of emotional exhaustion, depersonalization, and personal accomplishment was also not statistically significant to perceived ease of use, $F(9, 105) = 0.84$, $p = .583$, $R^2 = .067$. The coefficient of determination only increased by about 3.2% between the two steps, suggesting that the predictor variables added very little to the overall variance of perceived ease of use. Due to non-significance of the regression model, the null hypothesis was not rejected for Research Question Two (RQ2). Table 7 presents the findings of the hierarchical regression for RQ2.

Table 7

Results for Hierarchical Linear Regression with Emotional Exhaustion, Depersonalization, and Personal Accomplishment Predicting Perceived Ease of Use, While Controlling for Tenure, Professional Rank, and Years Using an LMS

Predictor	*B*	SE	β	*t*	*p*
Step 1					
Tenure status (reference: non-tenure track)					
Tenure-track	-1.05	3.53	-.04	-0.30	.768
Tenured	0.00	3.60	.05	0.28	.781
Professional rank (reference: Adjunct)					
Lecturer/instructor	0.39	3.06	0.05	0.46	.650
Assistance professor	2.75	3.76	.11	0.73	.466
Professor/associate professor	-2.69	3.90	-.14	-0.69	.492
Years using an LMS	-0.03	0.21	-.01	-0.13	.899
Step 2					
Tenure status (reference: non-tenure track)					
Tenure-track	-0.52	3.62	-.02	-0.14	.886
Tenured	1.40	3.68	.07	0.38	.706
Professional rank (reference: Adjunct)					
Lecturer/instructor	2.02	3.10	.08	0.65	.517
Assistance professor	3.55	3.82	.15	0.93	.355
Professor/associate professor	-2.45	3.89	-.12	-0.63	.530
Years using an LMS	0.01	0.21	.00	0.03	.977
Emotional exhaustion	-0.05	0.11	-.07	-0.47	.640
Depersonalization	0.08	0.29	.04	0.28	.782
Personal accomplishment	0.25	0.15	.18	1.68	.097

Note. Step 1) $F(6, 108) = 0.65$, $p = .694$, $R^2 = .035$, Step 2) $F(9, 105) = 0.84$, $p = .583$, $R^2 = .067$

Research Question Three

To what extent are perceived usefulness and perceived ease of use significant predictors of attitudes toward using technology, while controlling for tenure status,

professional rank, years using an LMS, emotional exhaustion, depersonalization, and personal accomplishment?

$H_0$3: Perceived usefulness and perceived ease of use are not significant predictors of attitudes towards using technology, while controlling for tenure status, professional rank, years using an LMS, emotional exhaustion, depersonalization, and personal accomplishment.

H_a3: Perceived usefulness and perceived ease of use are significant predictors of attitudes towards using technology, while controlling for tenure status, professional rank, years using an LMS, emotional exhaustion, depersonalization, and personal accomplishment.

To address research question three, a hierarchical linear regression was conducted. Tenure status, professional rank, and years using an LMS were treated as control variables. Emotional exhaustion, depersonalization, and personal accomplishment were inputted as predictor variables in the second step. Perceived use and perceived ease of use were entered as predictor variables in the third step. The criterion variable corresponded to attitudes toward technology.

Prior to conducting the analysis, the assumptions for a multiple linear regression were checked again. In the normal P-P plot, there was little to no deviation in the data compared to the normality trend line, thus the assumption of normality was met (see Figure 9). For homoscedasticity, there was little to no recognizable pattern in the scatterplot. Thus, the assumption of homoscedasticity was met (see Figure 10). None of the predictor variables had VIF values above 10. Therefore, there was no presence of multicollinearity and the assumption was met.

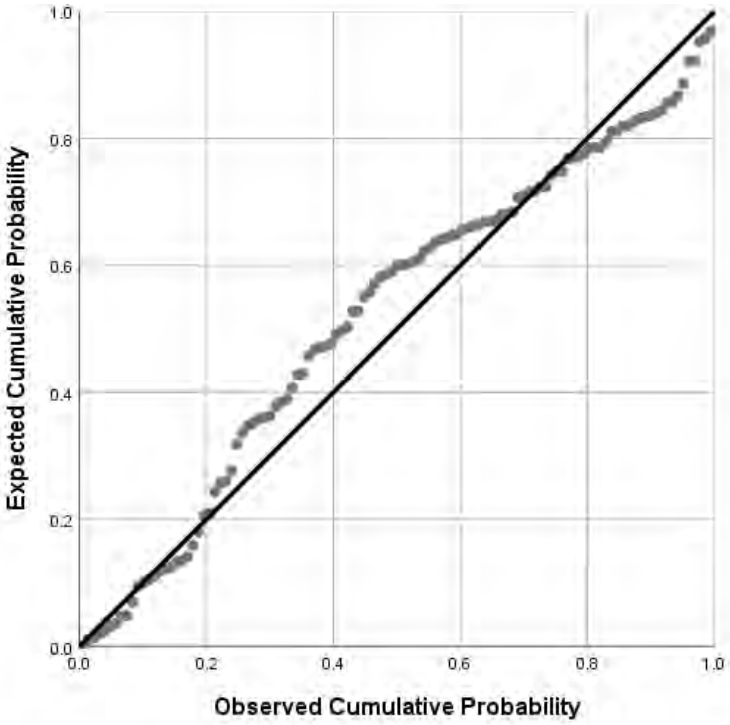

Figure 9. Normal P-P plot for attitudes toward technology.

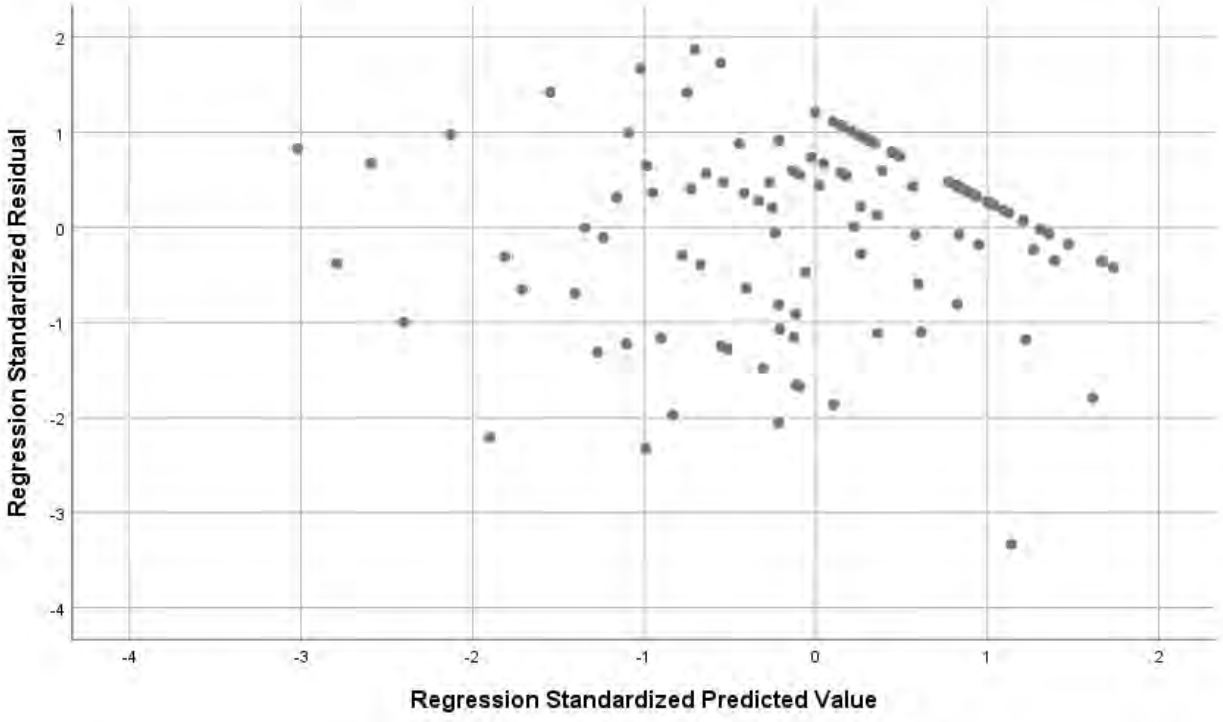

Figure 10. Homoscedasticity plot for attitudes toward technology.

The regression was conducted in two blocks, with the goal of determining the effect of covariates prior to assessing the contribution of emotional exhaustion, depersonalization, and personal accomplishment to the model's predictive ability on attitudes toward technology. The first block of the regression with the control variables provided a non-significant predictive model toward attitudes toward technology, $F(6, 108) = 0.38$, $p = .888$, $R^2 = .021$. The second block of the regression with the inclusion of emotional exhaustion, depersonalization, and personal accomplishment was statistically significant toward attitudes toward technology, $F(9, 105) = 0.42$, $p = .924$, $R^2 = .034$. The coefficient of determination increased by about 1.3% between the two steps, suggesting that the MBI-ES subscales added very little to the overall variance of attitude toward technology.

The third block of the regression with the inclusion of perceived use and perceived ease of use was statistically significant toward attitudes toward technology, $F(11, 103) = 9.15$, $p < .001$, $R^2 = .494$. The coefficient of determination increased by about 46.0% between steps 2 and 3, suggesting that the perceived use and perceived ease of use were strong contributors to the variance of attitude toward technology. Perceived use was a significant predictor of attitudes toward technology ($t = 4.96$, $p < .001$), such that with every one-unit increase in perceived use–attitudes toward technology increased by 0.16 units. Perceived ease of use was a significant predictor of attitudes toward technology ($t = 4.71$, $p < .001$), such that with every one-unit increase in perceived ease of use–attitudes toward technology increased by 0.22 units. Due to significance of the regression model, the null hypothesis was rejected for Research Question Three (RQ3). Table 8 presents the findings of the hierarchical regression for RQ3.

Table 8

Results for Hierarchical Linear Regression with Emotional Exhaustion, Depersonalization, and Personal Accomplishment Predicting Attitudes Toward Technology, While Controlling for Tenure, Professional Rank, and Years Using an LMS

Predictor	*B*	SE	β	*t*	*p*
Step 1					
Tenure status (reference: non-tenure track)					
Tenure-track	-0.28	1.95	-.02	-0.14	.886
Tenured	0.47	1.99	.04	0.24	.813
Professional rank (reference: Adjunct)					
Lecturer/instructor	-0.57	1.69	-.04	-0.34	.738
Assistance professor	0.91	2.07	.07	0.44	.664
Professor/associate professor	-0.59	2.15	-.05	-.028	.784
Years using an LMS	0.13	0.11	-.12	-1.12	.264
Step 2					
Tenure status (reference: non-tenure track)					
Tenure-track	-0.09	2.02	-.01	-0.04	.965
Tenured	0.51	2.05	.05	0.25	.804
Professional rank (reference: Adjunct)					
Lecturer/instructor	-0.34	1.73	-.02	-0.20	.843
Assistance professor	1.14	2.13	.09	0.54	.593
Professor/associate professor	-0.49	2.17	-.05	-0.23	.821
Years using an LMS	-0.11	0.12	-.10	-0.99	.325
Emotional exhaustion	-0.00	0.06	-.01	-0.07	.944
Depersonalization	-0.03	0.16	-.03	-0.17	.864
Personal accomplishment	0.08	0.08	.10	0.96	.339
Step 3					
Tenure status (reference: non-tenure track)					
Tenure-track	-0.12	1.48	-.01	-0.08	.936
Tenured	0.66	1.51	.06	0.44	.661
Professional rank (reference: Adjunct)					
Lecturer/instructor	-1.29	1.27	-.09	-1.01	.313
Assistance professor	-0.03	1.56	-.00	-0.02	.985
Professor/associate professor	0.01	1.59	.00	0.01	.994
Years using an LMS	-0.05	0.09	-.04	-0.55	.584
Emotional exhaustion	0.01	0.04	.03	0.25	.806
Depersonalization	-0.07	0.12	-.06	-0.59	.560
Personal accomplishment	0.00	0.06	.01	0.06	.950
Perceived use	0.16	0.03	.42	4.96	<.001
Perceived ease of use	0.22	0.05	.40	4.71	<.001

Note. Step 1) $F(6, 108) = 0.38$, $p = .888$, $R^2 = .021$, Step 2) $F(9, 105) = 0.42$, $p = .924$, $R^2 = .034$, Step 3) $F(11, 103) = 9.15$, $p < .001$, $R^2 = .494$

Summary

The purpose of this study was to discover whether or to what degree job-related burnout affects attitudes toward online learning technology by faculty. This chapter presented the findings of the data analysis. Descriptive statistics were used to explore the trends of the variables. The findings of the hypotheses for research questions one and two were not statistically significant, but the finding for the hypothesis for research question three was statistically significant. The null hypothesis for research questions one and two were not rejected. The null hypothesis for research question three was rejected. The next chapter will continue to explore the statistical findings in connection with the literature.

Chapter V

DISCUSSION

The purpose of this study was to determine whether or to what degree job-related burnout affects attitudes toward online learning technology by faculty. This chapter will review the findings presented in Chapter 4 and provide an interpretation of those findings. Next, implications will be discussed for the areas of theory, research, and practice. Limitations of the study will follow, as well as recommendations for future research. The chapter will finish up with some concluding statements.

The research questions that were addressed in this study are:

1. To what extent are emotional exhaustion, depersonalization, and personal accomplishment significant predictors of perceived usefulness, while controlling for tenure status, professional rank, and years using an LMS?
2. To what extent are emotional exhaustion, depersonalization, and personal accomplishment significant predictors of perceived ease of use, while controlling for tenure status, professional rank, and years using an LMS?
3. To what extent are perceived usefulness and perceived ease of use significant predictors of attitudes toward using technology while controlling for tenure status, professional rank, years using an LMS, emotional exhaustion, depersonalization, and personal accomplishment?

The first key finding that was presented in Chapter 4 was that the regression model for Research Question 1 (RQ1) was not significant. Due to this result, the null

hypothesis was not rejected for RQ1. The second key finding in Chapter 4 was that the regression model for Research Question 2 (RQ2) was not significant. As with RQ1, this result meant that the null hypothesis could not be rejected for RQ2. The third key finding showed that the regression model for Research Question 3 (RQ3) was significant at the third block for the variables Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). Due to this finding of significance, the null hypothesis for RQ3 was rejected.

Interpretation of the Findings

The Cronbach alphas of the continuous variables were all at the level of acceptable or higher. PU, Emotional Exhaustion (EE), and Attitude Towards Technology (AT) all had 0.9 or greater for the respective alphas, which is considered excellent. The alpha for PEOU was 0.82, which is considered good. Depersonalization (DP) and Personal Accomplishment (PA) had alphas of 0.71 and 0.73 respectively, which is considered acceptable. Compared with studies presented by Maslach, Jackson, and Leiter (2016), the DP and PA Cronbach alphas from this research are close to the typically reported results seen in the literature.

RQ1 looked at PU to see if the Maslach Burnout Inventory–Educators Survey (MBI-ES) variables or the control variables had any predictive effect on how faculty perceived the usefulness of D2L Brightspace®, a Learning Management System (LMS). None of the variables predicted the PU variable at any significant level. However, of them all, the variable of "Years using an LMS" had the most potential for predicting PU. However, an in-depth review of the literature has shown that most researchers focus on new technology implementations. The results of this finding may point to a need for more research on technologies already in place.

RQ2 looked at PEOU to see if any of the MBI-ES variables or control variables predicted PEOU. However, as with PU, none of the variables predicted PEOU at any significant level. The one variable that came closest to predicting PEOU was Personal Accomplishment (PA) at a $p = .097$. This may indicate that there is potential for PA to have some level of influence on PEOU and may warrant additional research.

RQ3 looked at AT through the hierarchical regression, first with the control variables, then MBI-ES, and finally with PU and PEOU. Of all the hypotheses presented in this study, only the results from this regression allowed for the rejection of the null hypothesis. The *p* for both PU and PEOU were significant at .001 which helps to add to the TAM body of knowledge. These results provide a study that has examined higher education faculty rather than students, as well as technology already in place that had received a recent upgrade versus a new technology implementation.

The findings of this study do not allow for the rejection of the null hypotheses for RQ1 or RQ2. However, due to the limited scope of the sample and other limitations (to be discussed later), there may be enough cause to warrant additional research with either how PA or years using similar systems may predict the variables of TAM. While multiple researchers have suggested that extending TAM can lead to an explanation of a significantly higher percentage of system acceptance (Agarwal & Prasad, 1997; Legris et al., 2002; Lucas & Spitler, 1999; Szajna, 1996), the findings from this particular study were unable to support this theory.

Implications for Theory and Practice

The goal of this study was to see if TAM could be extended with MBI-ES. However, the findings were not significant. This does not mean that MBI-ES could not

be used to extend TAM, more research would need to be conducted first to ascertain if the limitations of the study may have impeded the results of the research. The implications for TAM theory at the time of this research is that MBI may or may not be a viable means of extending TAM.

Instructional designers and trainers may still find some practical value in the findings of this study. The results for the variable of "Year using an LMS" hinted that it might have some effect on Perceived Usefulness of a system. Based on this, trainers and designers may want to incorporate prior learning experiences with systems similar to what the training topic is covering. Doing so may help those who are learning the system to more easily learn and adopt the system on which they are being trained.

Another area that designers and trainers may want to focus is on Personal Accomplishment, as it may influence users view of the Perceived Ease of Use of a system. A Pearson's correlation and Spearman's rho analyses were run post-hoc. The results of the Pearson's correlation between these two variables was $r = .184$, $n = 120$, $p = .045$. The results of the Spearman's rho between PEOU and PA was $r_s = .216$, $p = .018$. Figure 11 shows a scatterplot summarizing the results.

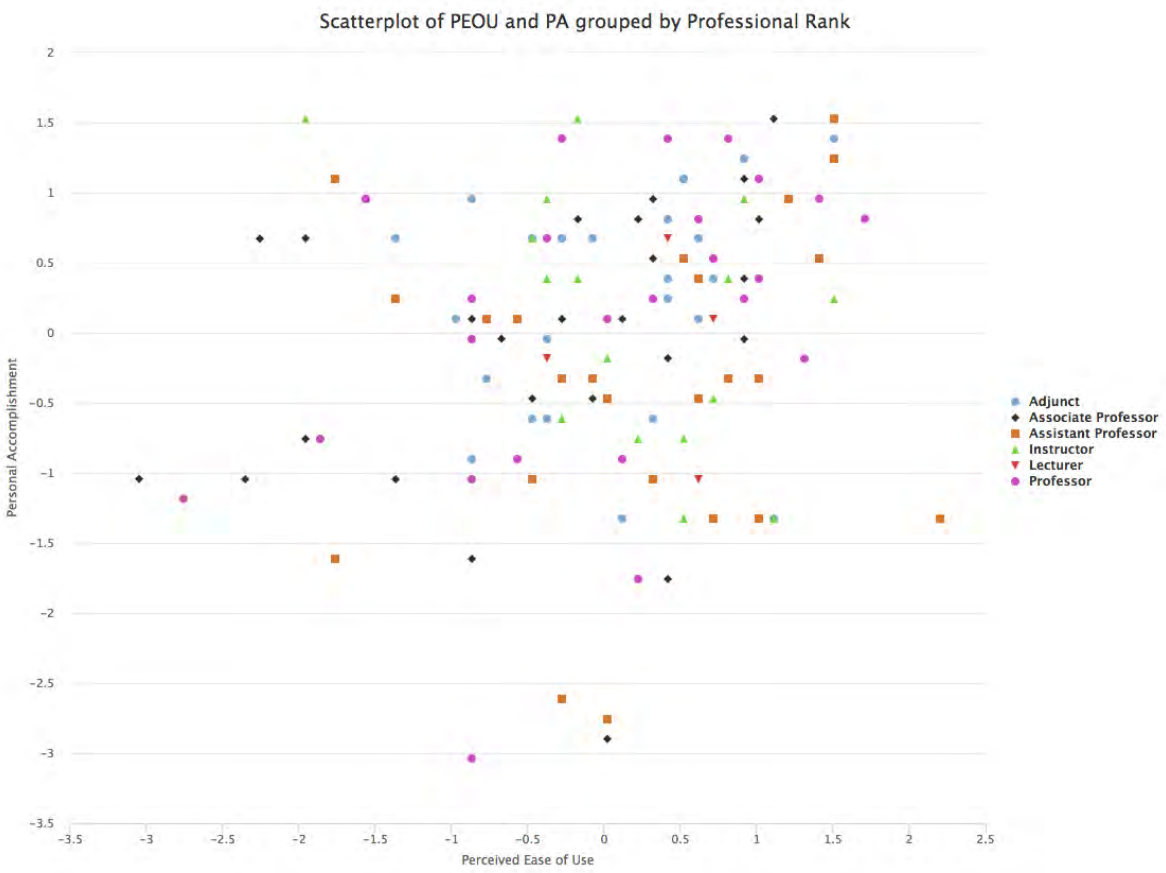

Figure 11. Scatterplot of PEOU and PA grouped by Professional Rank

Instructional designers and trainers might achieve utilization of PA to affect the PEOU of users who are learning the technology by demonstrating successful implementations of the system. Alternatively, by developing training that has a built-in rewards system to boost the learner's feeling of accomplishment as they progress through the training. Trainers and designers may want to experiment with different ways to boost the learner's feeling of personal accomplishment with the different systems on which they are training.

Limitations

One limitation of this study was the issue of geographic location. The two institutions selected for this study are located in the southern region of Georgia, which may limit generalizability to other institutions within Georgia, throughout the country, and worldwide. Another limitation with this study was the timing of when the survey was being emailed. The survey was sent out just before Thanksgiving and subsequently required additional reminder emails to be sent out to participants after the break was over. Also, the survey period was over the end of the semester, when final exams were being administered, and grades were due to be submitted to the registrar offices of the respective institutions. Because of these factors, faculty participation in the study may have been reduced since potential participants may have been too busy with their regular duties to take the survey.

Another limitation of this study is potential gender bias. As of Fall 2017, the gender distribution within the University System of Georgia (USG) was 53.8% male to 46.2% female. The sample distribution was 40.0% male to 58.3% female, for a total variation of 13.8% in this category. This demonstrates that the data may have a bias by the variation in the proportion of male to female participants. Comparing the two institutions, Albany State University (ASU) had a larger variance of 14.9% difference in gender as compared to Valdosta State University (VSU) which only had a 6.1% difference. The imbalance in the gender ratio to mimic that of the host institutions limits the generalizability of the findings of this study. This imbalance may have prevented the results from showing any significant difference in the variables between genders.

While USG provided Race/Ethnic Origin, the corresponding question was removed from this study. The reasoning for this change was the potential to trace survey responses back to an individual participant, thereby preventing the ability to retain anonymity for all participants. Removing this question from the study created a limitation since it cannot be concluded if race/ethnic origin had any influence on the variables in question.

Another potential limitation of this study is a bias in the Professional Rank category. Looking at the combined ranks of Professor and Associate Professor, the system-wide percentage was 53.2%, which was higher than the sample of 41.7% by 11.5%. For the two individual institutions, the percentage difference was higher. ASU had a population percentage in this category of 51.0%, which was higher than the sample of 36.5% by 14.5%. The population percentage for VSU was 60.68%, which was higher than the sample of 46.3% by 14.38%.

An unpredicted limitation occurred just before the period when potential respondents were solicited by email. ASU faculty and staff had received an email from the Information Security Office (ISO) in the Information Technology Division regarding potential spam/phishing email. During this period, the ISO was telling employees not to click on links in emails that they did not recognize. To obtain more participants from this institution, the researcher had to contact faculty on the participant list via the researcher's ASU email account to provide the faculty with evidence that the email was for a legitimate study. Several ASU faculty members contacted the researcher via telephone and email to verify the validity of the survey. Despite these steps, response numbers may have been limited by the security training that was in place at ASU.

Another limitation was that this was purely a quantitative study. There were no opportunities for respondents to provide written or verbal feedback or concerns about the LMS being studied. One faculty member called the researcher and expressed concern about the lack of ability to provide feedback. The faculty seemed to believe that the study was being conducted by an administration. However, it was not clear if the belief was that the survey was from institutional or USG level administration. This faculty member did not complete the survey because of the inability to voice opinions or feelings. The faculty member did not appear to realize the study was non-administrative. This incident showcases the limitation of studies that are solely quantitative. It is a possibility that other faculty members who were unhappy with D2L Brightspace® did not complete the survey for similar reasons.

The following are limitations this study had in common with other studies in the TAM field. First, this study was a voluntary study because faculty could opt-out at any time from the study, which presents the possibility of self-selection bias. This study also focused on one technology system, which may limit the generalizability to other system utilized by higher education institutions. Another limitation was that this was an individual study, nor was it longitudinal, both being limitations that can restrict the generalizability of the findings of this study.

Recommendations for Future Research

It is possible that burnout still has some effect on the TAM variables. There were multiple limitations in this study that may have precluded the findings from showing any results of significance. Repeating the study with a different sample group may yield different results. This research was focused on two institutions in the southern part of

Georgia. Sampling from institutions from elsewhere in the state of Georgia or the United States may provide different results and reduce the number of limitations that were encountered with this particular research.

Future researchers may want to consider adding qualitative response questions to the survey (e.g., "How do you think your use of the LMS affects student success/graduation?") to allow participants to prove comments about the software in question. Alternatively, focus groups could allow the researchers to hear discussion on what faculty (or end users) do or do not like about the software being utilized. Different types of focus groups other than face-to-face such as telephone or Skype can be examined to see how the various modes of communication encourage or hamper participation and the feeling of safety. Providing faculty members a safe place to discuss the systems could prove very beneficial and may provide additional insight.

Another future research option may be conducting this survey as a Pre/Post-test study with training intervention(s) in between. This method would be best implemented with new technology implementation or with major upgrades to a system. Conducting the research this way would provide a short-term longitudinal view of burnout and the TAM variables and may provide different findings in levels of significance. An example of a longer-term study might be with Masters level students, perhaps in a teacher's education program. The survey could be given upon entry of the program, and then repeated at the end of the semester through graduation. This would allow the researcher(s) also to gather information on multiple systems that the participants are using, such as the LMS, email system, word processing products, and other systems with which they may come in contact. If the study is conducted over a 5 to 7-year period,

multiple cohorts would be able to participate in the study and provide the researcher(s) with a very rich dataset.

The results of RQ1 showed that "Years Using an LMS" has the potential to affect Perceived Usefulness, and the results of RQ2 showed that Personal Accomplishment has the potential to affect Perceived Ease of Usefulness. Additional research needs to be conducted on these two variables to see if, under different circumstances, they can meaningfully add to the significance when predicting the TAM variables. Researching these variables may be easiest by paring with the Pre/Post-test method mentioned previously.

Conclusion

The results from RQ1 and RQ2 were not significant, and the null hypotheses were not rejected for the corresponding research questions. The results from RQ3 were significant at the third step of the regression model, and the null hypothesis was rejected. The result from RQ3 adds to the TAM body of knowledge by providing a study on higher education faculty, where the technology focused on had been in place for several years and had recently received an upgrade.

While the results did not show clear evidence that the demographics or MBI-ES variables had any significant influence on the TAM variables, there was some evidence that pointed to the need for additional research. Perceived Usefulness was most affected at $p = .150$ by the demographic variable of "Years using an LMS," and therefore this variable showed the most potential for future research in the field of TAM research. Additionally, Perceived Ease of Use was most influenced at $p = .097$ by the MBI-ES variable of Personal Accomplishment, indicating another potential influencer. Additional

research will need to be conducted to see if either of these variables or other MBI variables, can significantly predict variables of TAM.

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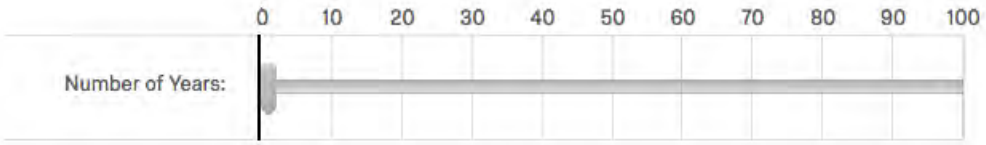
APPENDIX A:

Demographic Question Set

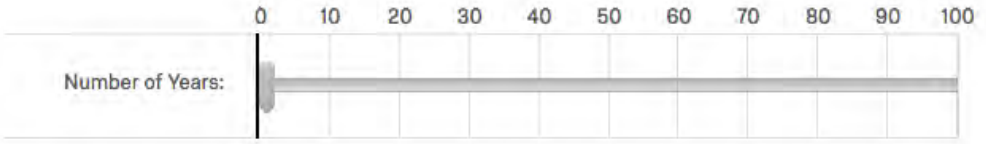
Appendix A

Demographic Question Set (13)

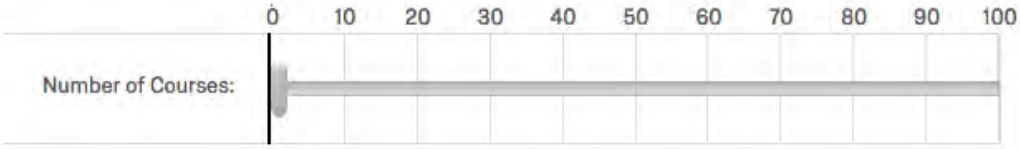
1. Which institution is the **Primary Institution** at which you are a faculty member?
    - Albany State University
    - Valdosta State University
2. Number of years teaching in **higher education** (rounded to the nearest whole number)?



3. Number of years teaching or supplementing courses with ***any*** Learning Management System in *higher education* (rounded to the nearest whole number)?



4. On average, how many courses have you taught or supplemented **per year** with ***any*** Learning Management System in *higher education*?



5. Other than Desire2Learn (the USG's current LMS), what other LMSs have you used in the past? (select all that apply)
    - ☐ ANGEL Learning
    - ☐ Blackboard Learning System
    - ☐ Canvas
    - ☐ Edmodo
    - ☐ Moodle
    - ☐ Sakai
    - ☐ Skillsoft
    - ☐ WebCT
    - ☐ Not Applicable–I've not taught with any other system
    - ☐ Other [with text box]

6. What is your gender?
    - o Male
    - o Female
7. What is your employment status?
    - o Full Time
    - o Part Time
8. What is your professional rank?
    - o Professor
    - o Instructor
    - o Associate Professor
    - o Lecturer
    - o Assistant Professor
    - o Adjunct
9. What is your tenure status?
    - o Tenured
    - o Tenure-track
    - o Non-tenure track

Validation Questions:

10. Have you ever taught a fully online course?

    Fully at a distance–"generally equivalent to delivering ***more than*** 95 percent of sessions via technology" (USG Enterprise Data Warehouse, 2016, p. 44).

    - o Yes
    - o No
11. Have you ever taught a partially online course?

    Partially at a distance–"technology is used to deliver ***more than*** 50 percent of class sessions" (USG Enterprise Data Warehouse, 2016, p. 44).

    - o Yes
    - o No
12. Have you ever taught a hybrid course?

    Hybrid Courses–"technology is used to deliver 50 percent or ***less*** of class sessions" (USG Enterprise Data Warehouse, 2016, p. 44).

    - o Yes
    - o No
13. Have you ever taught a face-to-face course with online supplementation?

    Technology enhanced [Supplemental Use]–"technology is used in delivering instruction to all students in the section, but no class sessions are replaced by technology" (USG Enterprise Data Warehouse, 2016, p. 44).

    - o Yes
    - o No

APPENDIX B:

Technology Acceptance Model Questions

Appendix B

Technology Acceptance Model Questions (25)

Items for Attitude Towards Using

Instructions: Rate your response to the statement by checking the appropriate space.

For example:

	Knowledgeable	___:_✓_:___:___:___:___:___	Ignorant

All things considered, my using D2L Brightspace is…

1.	Good	____:___:___:___:___:___:___	Bad
2.	Foolish	____:___:___:___:___:___:___	Wise
3.	Favorable	____:___:___:___:___:___:___	Unfavorable
4.	Harmful	____:___:___:___:___:___:___	Beneficial
5.	Positive	____:___:___:___:___:___:___	Negative

Note: To help reduce bias, adjective pairs have been alternated from left and right sides so that not all the "good" adjectives sit on one side of the scale.

Items for Perceived Usefulness

Please indicate your level of agreement with each statement on a 7-point Likert scale. (1 = strongly disagree and 7 = strongly agree).

1. Using D2L Brightspace improves the quality of the work I do.
2. Using D2L Brightspace gives me greater control over my work.
3. D2L Brightspace enables me to accomplish tasks more quickly.
4. D2L Brightspace supports critical aspects of my job.
5. Using D2L Brightspace increases my productivity.
6. Using D2L Brightspace improves my job performance.
7. Using D2L Brightspace allows me to accomplish more work than would otherwise be possible.
8. Using D2L Brightspace enhances my effectiveness on the job.
9. Using D2L Brightspace makes it easier to do my job.
10. Overall, I find D2L Brightspace useful in my job.

Items for Perceived Ease of Use

Please indicate your level of agreement with each statement on a 7-point Likert scale. (1 = strongly disagree and 7 = strongly agree).

1. I find it cumbersome to use D2L Brightspace.
2. Learning to operate D2L Brightspace is easy for me.
3. Interacting with D2L Brightspace is often frustrating.
4. I find it easy to get D2L Brightspace to do what I want it to do.
5. D2L Brightspace is rigid and inflexible to interact with.
6. It is easy for me to remember how to perform tasks using D2L Brightspace.
7. Interacting with D2L Brightspace requires a lot of my mental effort.
8. My interaction with D2L Brightspace is clear and understandable.
9. I find it takes a lot of effort to become skillful at using D2L Brightspace.
10. Overall, I find D2L Brightspace easy to use.

APPENDIX C:

Maslach Burnout Inventory–Educators Survey Permission

Appendix C

www.mindgarden.com

To Whom It May Concern,

The above-named person has made a license purchase from Mind Garden, Inc. and has permission to administer the following copyrighted instrument up to that quantity purchased:

Maslach Burnout Inventory forms: Human Services Survey, Human Services Survey for Medical Personnel, Educators Survey, General Survey, or General Survey for Students.

The three sample items only from this instrument as specified below may be included in your thesis or dissertation. Any other use must receive prior written permission from Mind Garden. The entire instrument form may not be included or reproduced at any time in any other published material. Please understand that disclosing more than we have authorized will compromise the integrity and value of the test.

Citation of the instrument must include the applicable copyright statement listed below. Sample Items:

MBI - Human Services Survey - MBI-HSS:

I feel emotionally drained from my work.
I have accomplished many worthwhile things in this job.
I don't really care what happens to some recipients.

MBI - Human Services Survey for Medical Personnel - MBI-HSS (MP):

I feel emotionally drained from my work.
I have accomplished many worthwhile things in this job.
I don't really care what happens to some patients.

MBI - Educators Survey - MBI-ES:

I feel emotionally drained from my work.
I have accomplished many worthwhile things in this job.
I don't really care what happens to some students.

Cont'd on next page

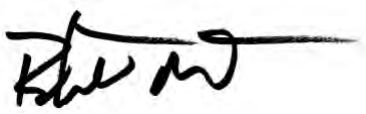
MBI - General Survey - MBI-GS:

I feel emotionally drained from my work.
In my opinion, I am good at my job.
I doubt the significance of my work.

MBI - General Survey for Students - MBI-GS (S):

I feel emotionally drained by my studies.
In my opinion, I am a good student.
I doubt the significance of my studies.

Sincerely,



Robert Most
Mind Garden, Inc.
www.mindgarden.com

APPENDIX D:

Maslach Burnout Inventory–Educators Survey Sample Questions

Appendix D

The purpose of this portion of the survey is to discover how educators view their jobs and the people with whom they work closely.

Instructions: On the following page are 22 statements of job-related feelings. Please read each statement carefully and decide if you ever feel this way about *your* job. If you have *never* had this feeling, write the number "0" (zero) in the space before the statement. If you have had this feeling, indicate *how often* you feel it by writing the number (from 1 to 6) that best describes how frequently you feel that way. An example is show below.

How often:	**0**	**1**	**2**	**3**	**4**	**5**	**6**
	Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day

How Often
0-6 **Statements: [SAMPLE]**

1. _____ I feel emotionally drained from my work.
2. _____ I have accomplished many worthwhile things in this job.
3. _____ I don't really care what happens to some students.

APPENDIX E:

Initial Email/Consent Statement

Appendix E

Initial Email/Consent Statement

You are being asked to participate in a survey research project entitled *"Job-Related Attitudes and the Correlation to Attitude Toward Technology in Higher Education Faculty,"* which is being conducted by Dorea M. Hardy, a graduate student at Valdosta State University. This survey is anonymous. No one, including the researcher, will be able to associate your responses with your identity. Your participation is voluntary. You may choose not to take the survey, to stop responding at any time, or to skip any questions that you do not want to answer. You must be at least 18 years of age to participate in this study. Your completion of the survey serves as your voluntary agreement to participate in this research project and your certification that you are 18 or older.

Questions regarding the purpose or procedures of the research should be directed to Dorea M. Hardy at (478) 561-0690 or dmhardy@valdosta.edu. This study has been exempted from Institutional Review Board (IRB) review in accordance with Federal regulations. The IRB, a university committee established by Federal law, is responsible for protecting the rights and welfare of research participants. If you have concerns or questions about your rights as a research participant, you may contact the IRB Administrator at 229-259-5045 or irb@valdosta.edu.

APPENDIX F:

Follow-up Email to Non-Responded Participants

Appendix F

You are being asked to participate in a survey research project entitled *"Job-Related Attitudes and the Correlation to Attitude Toward Technology in Higher Education Faculty,"* which is being conducted by Dorea M. Hardy, a graduate student at Valdosta State University. This survey is anonymous. No one, including the researcher, will be able to associate your responses with your identity. Your participation is voluntary. You may choose not to take the survey, to stop responding at any time, or to skip any questions that you do not want to answer. You must be at least 18 years of age to participate in this study. Your completion of the survey serves as your voluntary agreement to participate in this research project and your certification that you are 18 or older.

Questions regarding the purpose or procedures of the research should be directed to Dorea M. Hardy at (478) 561-0690 or dmhardy@valdosta.edu. This study has been exempted from Institutional Review Board (IRB) review in accordance with Federal regulations. The IRB, a university committee established by Federal law, is responsible for protecting the rights and welfare of research participants. If you have concerns or questions about your rights as a research participant, you may contact the IRB Administrator at 229-259-5045 or irb@valdosta.edu.

APPENDIX G:

Albany State University Letter of Cooperation

Appendix G

October 17, 2018

Dorea M. Hardy
435 Kingswood Court
Albany, GA 31707

Dear Ms. Hardy,

Subject: Letter of Cooperation

Albany State University is pleased to collaborate with you on your project "Job-Related Attitudes and the Correlation to Attitude toward Technology in Higher Education Faculty."

We understand that participating in this research/project will include obtaining a list of active instructional faculty, from which, a sample will be randomly selected to receive a survey link sent through email via Valdosta State University's Qualtrics® system. We have discussed the research/project with you and you have described the project in some detail.

According to our agreement, project activities will be carried out as described in the research/project plan reviewed and approved by the Valdosta State University Institutional Review Board.

Once approval has been received from Valdosta State University's IRB, all relevant documentation will be submitted to Albany State University's IRB in accordance with the institution's policies and procedures.

We look forward to working with you, and wish you all success.

Sincerely,

Rajeev Parikh, Ph.D., CFA, CMA, CFM
Interim Provost/VPAA
Albany State University

APPENDIX H:

Valdosta State University Protocol Exemption Report

Appendix H

Institutional Review Board (IRB)
For the Protection of Human Research Participants

PROTOCOL EXEMPTION REPORT

Protocol Number:	03727-2018	**Responsible Researcher:**	Ms. Dorea Hardy
		Supervising Faculty:	Dr. Kenneth Ott
PROJECT TITLE:	*Job-Related Attitudes and the Correlation to Attitude Toward Technology in Higher Education Faculty*		

INSTITUTIONAL REVIEW BOARD DETERMINATION:

This research protocol is **Exempt** from Institutional Review Board (IRB) oversight under Exemption **Category 2**. Your research study may begin immediately. If the nature of the research project changes such that exemption criteria may no longer apply, please consult with the IRB Administrator (irb@valdosta.edu) before continuing your research.

ADDITIONAL COMMENTS:

- *Upon completion of your research study all compiled data must be securely maintained (locked file cabinet, password protected computer, etc.) and accessible only by the researcher for a minimum of 3 years.*

☒ ***If this box is checked, please submit any documents you revise to the IRB Administrator at irb@valdosta.edu to ensure an updated record of your exemption.***

Elizabeth Ann Olphie *10.31.2018*
Elizabeth Ann Olphie, IRB Administrator

Thank you for submitting an IRB application.
Please direct questions to irb@valdosta.edu or 229-253-2947.

Revised: 06.02.16

APPENDIX I:

Albany State University Determination of Exempt Status

Appendix I

OFFICE OF RESEARCH AND SPONSORED PROGRAMS

DATE:	November 7, 2018
TO:	Dorea Hardy, M.Ed.
FROM:	Albany State University IRB
PROJECT TITLE:	[1346551-1] Job-Related Attitudes and the Correlation to Attitude Toward Technology in Higher Education Faculty
REFERENCE #:	
SUBMISSION TYPE:	New Project
ACTION:	DETERMINATION OF EXEMPT STATUS
DECISION DATE:	
REVIEW CATEGORY:	Exemption category

Thank you for your submission of New Project materials for this project. The Albany State University IRB has review your protocol and is approving this project as exempt under Category #1: Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as: regular and special education instructional strategies, or effectiveness or comparison of instructional techniques, curricula, or classroom management methods.

We will retain a copy of this correspondence within our records.

If you have any questions, please contact Cheri Williams at (229) 430-3690 or mackelle.williams@asurams.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Albany State University IRB's records.